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ENCYCLOPÆDIA BRITANNICA

SEVENTH EDITION.

THE
ENCYCLOPÆDIA BRITANNICA

OR
DICTIONARY

OF
ARTS, SCIENCES, AND GENERAL LITERATURE.

SEVENTH EDITION,

WITH PRELIMINARY DISSERTATIONS ON THE HISTORY OF THE SCIENCES,

AND

OTHER EXTENSIVE IMPROVEMENTS AND ADDITIONS;

INCLUDING THE LATE SUPPLEMENT,

A GENERAL INDEX,

AND NUMEROUS ENGRAVINGS.

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ENCYCLOPÆDIA BRITANNICA.

Boring. **B**ORING, generally speaking, is the art of perforating a solid body. In the present article we propose to give some account of the boring of CANNON, of CYLINDERS, of MUSKETS, of PORTLAND STONE, of ROCKS, and of WOODEN PIPES.

Cannon. 1. BORING OF CANNON is performed by placing the cannon on an axis, which is turned by a very strong power, whilst a steel cutter, in form of a drill, is pressed against the metal, and excavates the cylindrical cavity which is required. Boring may be considered as a branch of the art of turning, which, in general, is the formation of cones, cylinders, and other figures that have an axis, by making a straight line or curve revolve round the axis on which the material is fixed, or by making the material revolve whilst the generating line remains at rest. In turning bodies of no great degree of hardness, and where it is required to take off only a small portion of the surface at once, a small power is sufficient to put the turning machine in motion; and the longer the edge of the cutter which is applied to the metal is, and the harder the metal, the greater force is required to turn the machine.

Cannon, at first, were frequently made of bars of malleable iron, placed longitudinally, and these bars covered with iron hoops, the whole welded or brazed together. Ordnance of this construction was not sufficiently strong to resist the explosion of the powder, and did not admit of the cylindrical cavity being formed with much accuracy. Its use was, therefore, gradually laid aside, and guns of cast-metal were employed. And before the casting of cannon became general, guns of cast-metal were reserved for the most important situations; thus the ships of the admiral and vice-admiral alone had cast-metal cannon, the other ships of war being armed with wrought-iron guns only.

Copper, without mixture, has been employed to cast guns, as appears from two large cannon made in the time of Henry VIII. and bearing his name, in the armoury of the Tower of London. But the only two materials now used for cannon are bronze, which is a mixture of copper and tin, and cast-iron. In modern times the use of cast-iron cannon has become more general, as that metal has the advantage of not being softened by the heat of the inflammation of the powder; whereas brass guns, when fired many times in rapid succession, become heated so

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nearly to the melting temperature of the metal, that the muzzle of the gun droops. Boring.

The first cannon made of cast-metal were cast hollow, with a cavity as nearly cylindrical as could be executed by casting. The surface of this cavity was then smoothed on a boring machine by steel cutters set in a copper head, and disposed so as to describe a cylinder terminated by a half spheroid. These cutters (in French *alézoirs*, and the operation *alézer*) are represented in the French *Encyclopédie*—*planches, Fonte*. This method of making guns has long been laid aside on account of the holes and inequalities in the cavity thus formed, and the difficulty of casting the cavity so as that its axis shall coincide with the axis of the piece. Cannon are now always cast solid, and the cylindrical cavity is formed by boring in this solid mass.

The power employed for boring cannon ought to be in proportion to the hardness of the metal of which they are composed, and to the size of the pieces. For the boring of guns of brass, as it is called, that is, a metal composed of ten parts of copper, one of tin, and two of brass, or of these metals in other proportions, a metal softer and more easily bored than cast-iron, horses are frequently employed as a moving power; but the strong moving powers of water or steam must be had recourse to for boring large guns of cast-iron, which is the material used for making the largest guns now in use, and is also the hardest substance used in their manufacture. Indeed some kinds of cast-iron are too hard to admit the action of the borer; and for the making of guns it is necessary to melt pig-iron of different qualities together, in order to have a metal that shall possess no more than the required degree of hardness.

The quality of pig-iron is known by the appearance of its surface, but more decisively by the appearance which its fracture presents. To obtain this fracture, a man takes one end of a pig in each hand, and lifting it as high above his head as he can, throws it with force, so that the middle of the pig shall fall across another pig placed on the ground. In this way the pig thrown down is broken. Soft or grey pig-iron, which is the most valuable, breaks with difficulty, and the surface of its fracture is of a grey colour, composed of pretty large crystalline grains. Hard or white pig-iron breaks easily; the surface of the fracture is white, and not sensibly granulated, the grains that compose it being small. The pig-iron here

Boring. spoken of is that smelted by the coak of pit-coal. Pig-iron smelted with charcoal of wood has a fracture of a different appearance, sometimes lamellar, like the fracture of metallic bismuth. Formerly guns used to be cast from the blast furnace; that is to say, immediately from the ironstone. This was attended with uncertainty in respect to the nature of the metal; for the nature of the metal given by the blast-furnace varies frequently and suddenly, from causes either unknown, or not under the command of the iron-master. For this reason guns are no longer cast from the blast-furnace, but pig-iron already formed is taken, of such qualities and in such proportions as to form a metal neither too soft nor too brittle and hard for guns. The different kinds of pig-iron thus selected are melted together in a furnace, called in iron manufactories an *air-furnace*, and by some writers a *reverberatory furnace*, by the flame of pit-coal; the flame being impelled by a strong current of air produced by the rarefaction of the air in a chimney of thirty or forty feet in height. The column of the atmosphere of which the air in the chimney makes a part being lighter than the unrefined columns of the atmosphere next it, its equilibrium with these columns is destroyed. The neighbouring columns, therefore, rush through the grate of the furnace, which is the only aperture by which they can attain the bottom of the rarefied column; and they carry the flame of the coal against the pig-iron, which is thereby brought into fusion. From the iron thus fused only one large gun is cast at a time, the furnace not being capable of melting more metal than is requisite for that purpose.

The gun is cast with two appendages, which are to come off before it is finished and ready for use. The one is a square piece beyond the cascabel, for fixing the gun so as to revolve with the axis of the boring-mill; and the other is the head.

The head in cast-iron cannon is a mass of cast-iron two or three feet long, and somewhat bell-shaped. It is a prolongation of the mass of metal beyond the muzzle ring, and, in the position in which the gun is cast, the head is the top of the whole mass, the square beyond the cascabel being the lowest part. After the metal has cooled, the upper surface of the head is cavernous, as is the case with the surface that is uppermost during the casting and cooling of any large body of cast-iron. The sides of the cavities in the head are frequently formed of cast-iron crystallized in a fern-leaf form. The intention of the head is to prevent these cavities, which are formed most abundantly at the upper surface of the cooling cast-iron, from forming in the gun itself. But, notwithstanding the precaution of casting the gun with a large head, and of mixing proper kinds of cast-iron in the air-furnace, it frequently happens that small cavities occur in the guns.

The gun with its head being cast and allowed to cool, it is conveyed to the boring-mill, where the head is to be taken off, the cylindrical cavity or bore is to be formed, and the outside of the gun is to be turned. Formerly the boring of guns was done in an upright position; the gun being placed above the boring-bar, was fixed in a frame sliding vertically in grooves. This frame was suspended on each side by a block and tackle, and the end of each of the two ropes was wound round a windlass. By turning these windlasses the gun might be raised or lowered, and by this means might be allowed either to press with its whole weight on the boring-bit, or with any part of its whole weight. A figure of this apparatus may be seen in the French *Encyclopédie*—planches, *Fonte*. Another vertical apparatus for boring cannon is represented in Rinman, *Bergwerks Lexicon*, Stockholm, 1789, tab. iv.

The practice which has long been followed in this country is to place the gun horizontally in the boring-mill; and

it is fixed on the axis of the mill by means of the square piece at the cascabel. **Boring.**

In a boring-mill constructed by Smeaton, one gun is placed on the horizontal axis of the water-wheel itself, and, consequently, revolves with the same velocity. On this same axis is a toothed wheel with seventy-eight teeth, which works two wheels, one placed on each side of it, and each having twenty-nine teeth. On the axis of each of these a gun is placed; their power is $\frac{1}{10}$ ths of the power of the centre wheel. (See Smeaton's *Reports*, vol. i.) On the axis where the power is least, smaller sized guns are bored; on the axis of the greatest power the large guns are bored. A crane, movable on a vertical axis, with a sweep that extends over all the carriages, with a tackle hanging from its beam, and wrought by a windlass, serves to place the gun on the carriage where it is to be bored, or to remove it from one carriage to another if required; and afterwards, when the gun is bored and turned, the crane serves to remove the gun from the boring-mill.

The gun, when placed on the machine, has the square at the cascabel fixed in a square iron box (G, Plate CXI. fig. 5) on the axis. This box has a screw passing through each of its sides, and by the operation of these screws the square of the gun is adjusted, centred, and fixed; the chace of the gun is also fixed in a collar N, in which it is to revolve. (The collar in the figure is represented too near the muzzle ring.)

The axis on which each gun is fixed may be set in gear, or put in connection with the revolving axis of the machine, so as to move round with it; or taken out of gear so as to remain at rest, although the other parts of the machine continue in movement. There are various methods of doing this. One is given by Smeaton in the work above cited. After the gun is fixed on the axis, and before beginning the operation of boring, the head, which has been described above, is cut off near the muzzle ring. For this purpose the gun is set in gear so as to revolve on its axis with the moving power; and a bar of steel, in shape and size like the coulter of a plough, is applied at right angles to the axis of the gun. The narrow side of this bar is sharpened to a cutting edge, so that it has the form of one tooth of a very large saw; and this cutting edge is opposed to the direction of the revolving motion of the gun, and held strongly on to the gun by a screw pressing on the bar; the cutter takes off an angular portion at right angles to the axis, till the cylindrical part connecting the head with the gun is so much diminished, that the head is made to fall off by the blow of a hammer applied on it. In brass guns, cast with a core, the head was sawed off by hand with a blade of steel, whose edge was toothed as a saw, while the sides were toothed as files. See the French *Encyclopédie*—planches, *Fonte*.

A great degree of heat is generated by the violent friction of the steel-cutter on the cast-iron during the operation of cutting off the heads of guns. The quantity of this heat has been estimated by Rumford in one of his *Essays on Heat*.

After the head is taken off, the workmen proceed to bore the gun. This is done by exposing the revolving gun to the action of a steel-cutter, fixed on the end of a bar, which bar is placed on a carriage, and impelled continually towards the gun. The operation of boring is done on the same axis on which the head was cut off, if the power be sufficient; if not, the gun is removed, by means of the crane, to an axis, where it is made to revolve by a stronger power.

The boring-bar is fixed on a carriage sliding in iron grooves, which are truest when made triangular. The carriage, which, in the apparatus represented at fig. 5, consists merely of the bar on which the rack is, is pressed

Vertical boring.

Horizontal boring.

Boring. forward by a pinion P, whose gudgeons are on a fixed frame BB; and this pinion works into a rack R. The axis of the pinion has mortised holes in it, through which one end of a lever L is passed; and the other end of this lever is loaded with a weight W, which causes the pinion to propel the carriage and boring-bar towards the gun. In many boring-machines there are two pinions on the same axis, acting on two racks; in others, the carriage is propelled by two upright levers, on the end of one of which acts a weight, hanging from a rope, that passes over a pulley; the lower end of the upper lever acts on the upper end of the lower, whilst the lower extremity of the lower lever presses forward the carriage. This method, which is free from any inequalities that may arise from the teeth of the rack, is figured by Smeaton in his *Reports*, vol. i. p. 396. Another method of propelling the carriage of the boring-bar, is by a screw acting on the end of the carriage. See Meyer in the *Transactions of the Academy of Stockholm*, 1782, tab. ix.

The boring-bar is a very strong piece of wrought iron, of less diameter than the intended calibre of the piece, in order that the boring dust or shavings detached by the cutter may be got out. The boring-bar is increased in diameter near the end, for some inches, see fig. 6, B; in this part there is a superficial groove for receiving the sides of the steel-cutter or bit, which is to be firmly fixed in the bar. The bit T, fig. 6, is made from a rectangular piece of a steel bar, in which the two upper angles are cut off obliquely, so as to form two cutting edges like an obtuse-angled drill; the side of the rectangle, opposite to the point of the drill, is then hollowed out in the form of a pigeon hole; and this hollow fits into and embraces the solid part of the boring-bar, whilst the sides of the pigeon hole fit into the grooves of the bar. The point of this obtuse-angled bit is pressed against the revolving metal of the gun, by the force which propels the boring-bar; and the edges coming in contact with the revolving metal, a conical cavity is produced; so that, by taking off successively a multitude of similar shells or shavings, the cylindrical bore, with a conical termination, is formed. The diameter of the pointed bit first used must be less than the intended calibre of the piece, as the boring is to be repeated again at least once, in order to make the internal cylindrical surface as smooth as possible, by taking off any inequalities that have been left by the first cutter. In finishing the bore, a cross bit may be employed. It is a rectangular piece of steel, ground to a cutting edge at each end, and put through a hole in the boring-bar, in which it is fixed. The edges of this cutter, in revolving, describe a cylindrical surface. After the cylindrical surface of the bore is made sufficiently true, and of the required calibre, a bit without a point, and rounded off to the desired curve, is used to form the bottom of the chamber.

Some recommend that the boring-bit for cast-iron should have its cutting edges brought to an acute angle, by being filed hollow; but in this case the two edges cannot be brought into one point; for the obtuse-angled edge formed by the thickness of the metal of the bit joins the two cutting edges crossways, and forces itself forwards by being near the centre, requiring, however, a considerable pressure. These hollow-edged bits are not so well adapted to continuance of grinding as the plain ones, but they make amends by their much less frequently wanting sharpening. It does not appear, however, that these hollow-edged bits have been found advantageous in gun-boring.

The howitzer appears to have had its origin in Germany. This piece of ordnance, the mortar, and the coronade, in all of which the diameter of the chamber for the powder is smaller than the diameter of the rest of

the bore, are first bored all through, nearly to the intended calibre of the chamber, and then that part of the bore that requires it is enlarged.

The cutters in gun-boring become magnetic, in consequence of being continually rubbed in the same direction, so that the boring dust is seen adhering and hanging from their edges when they are withdrawn from the gun.

It is required that the bore shall be a cylindrical cavity whose axis coincides with the axis of the gun: for this purpose, care must be taken to place the axis of the boring-bar, and that of the gun, both in one horizontal line, and it is requisite that these two lines continue in this position during the whole operation of boring. The centring of the boring-bar for this purpose requires to be done by an experienced workman, and an accurately-constructed boring-machine is necessary for the continuance of the right position.

Whilst on the axis of the mill, the gun has a smooth outer surface given it by turning tools, which are applied in the way usual in turning metals; a wooden gauge, or cut-out profile, of the gun, with its intended mouldings, being applied to know when the turning has been continued to a proper depth. When this is done the gun is taken out of the boring-mill; the square at the cascabel is cut off by the chisel; and the trunions, and other parts which are not susceptible of being turned, are dressed by the chisel. The cyphers and arms which had been cast on the gun are finished by the chisel.

A cannon is said to constitute the *ultima ratio regum*, the last argument that governments have recourse to; and even this severe kind of argument has sometimes been embellished. Amongst ornamented cannon, the brass three-pounder in the Tower, brought from Malta, is a masterpiece; it is covered with carving in a good taste by a sculptor of Rome.

The touch-hole is drilled by stock and bit, or by drill and bow; the drill being propelled by a lever placed on a carriage, movable on wheels. A figure of this apparatus is given in the *Encyclopédie*—planches, *Fonte*. Another apparatus for this purpose is figured in Rinman, *Bergwerks Lexicon*, table xiv. fig. 9, 10. See also Monge, *Description de l'Art de Fabriquer les Canons*, in 4to, Paris, 1794. This work was published by order of the revolutionary government, and distributed to the iron-masters and founders in different parts of France, for their instruction. It contains, amongst others, figures and descriptions of two kinds of vertical boring machines, of three kinds of horizontal boring machines, of a machine for turning the trunions, of two different machines for boring the touch-hole, of a machine for putting copper boshes in brass guns, and of various instruments for examining and proving guns.

Before the gun is sent off, it is examined and proved in various ways. And first, to ascertain whether the bore is free from holes, an instrument is employed, consisting of several elastic steel prongs disposed in a circle, and with their sharp points turned outwards. This being fixed on a pole, is introduced into the bore of the gun, and drawn to and fro; the points of the prongs press against the sides of the bore, and the presence of a hole is known by one of the prongs getting into the hole, and preventing the instrument from being drawn out directly, unless by the use of a ring that is pushed over the prongs to unbend them.

There is another instrument, composed of a board twice as long as the bore of the piece. Along the middle of the board is a groove proceeding in a straight line. In this groove a button is movable, and on the button, as a centre, are fixed two radii or arms; the two ends of these arms within the gun describe a line on the inside of the bore when the button is pushed inwards, whilst the extremities of the

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Boring. arms on the outside describe two similar lines on the part of the board that is situate without the bore. In this way the outline of a longitudinal section of the bore is described, and its sinuosities or deviation from the axis are rendered sensible. This instrument is seldom used; it requires to be made by a workman skilled in the construction of mathematical instruments, or in watchmaking.

A lighted wax-candle is introduced into the gun for the purpose of seeing any defects there may be in the bore, or the light of the sun is reflected into the bore by a mirror. The strength of the gun is proved by firing it with a large charge of powder; and by forcing water into the bore by a powerful forcing pump, the touch-hole being stopped, and also the mouth of the piece, so that water forced in by the mouth cannot return that way.

Cylinders. 2. BORING OF CYLINDERS for steam-engines, and for blowing machines, and the boring of the working barrels of large pumps, and other hollow cylinders in which pistons are to work, is performed by making the steel-cutters describe a cylindrical surface on the inside of the cylinder, whilst the cylinder remains fixed. The first steam-engine cylinders in this country were of brass, or of a mixture of copper and tin. This was the case with the cylinder of the steam-engine erected in the early part of the eighteenth century for lifting water from the colliery of Elphinston in Stirlingshire. But since that period the construction of steam-engines, and the manufacture of cast-iron, have been greatly improved; the uses of both have been much extended; and cast-iron has now for a long time been the only material employed in making cylinders for steam-engines, and other large cylinders in which pistons are to move.

In the boring of cylinders the steel-cutters are fixed in a cutter-head, which revolves with the boring-bar at the same time that it is impelled along the interior surface of the cylinder by a rack, with a pinion moved by a lever and weight as already described. The axis or boring-bar employed for cylinders is a hollow tube of cast-iron, and has a groove passing through it; the length of this groove being proportioned to the length of the cylinder to be bored. The cutter-head consists of two cast-iron rings, the first of which is accurately fitted on the boring-bar, which is turned truly cylindrical, so that this ring may slide along the boring-bar; the second ring is fixed round the first by wedges, its diameter being proportioned to the diameter of the cylinder to be bored; and on its circumference are eight notches to receive the steel-cutters, which are fixed in by wedges. The first ring is fixed on the boring-bar so as to make the whole cutter-head move round with the boring-bar, by means of two small iron bars, which go through notches in the first ring, and pass through the groove of the boring-bar. These small bars have each a round hole in the part which passes through the geometrical axis of the boring-bar; through these round holes there passes a bolt, which forms the end of the rack; a key is put through the end of the bolt, which prevents the rack from being drawn back by the lever and weight; and by this means the rack, impelled by the lever and weight, pushes forward the cutter-head, which is at the same time revolving with the boring-bar; while the connection of the rack and cutter-head being round, and in the axis of motion, the rack is thereby free from the circular motion of the cutter-head. This mode of constructing the boring-bar was invented in the works of Mr Wilkinson, at the time when accurately-bored cylinders came to be required in consequence of Mr Watt's improvements in the steam-engine. In the machines about to be mentioned the cutters are made to advance by a train of wheels deriving their motion from the power that turns the boring-bar.

An apparatus of great merit was contrived and describ-

ed in 1802 by Mr Billingsley, engineer of the Bowling iron-works, near Bradford. (See *Repertory of Arts*, second series, vol. ii. p. 322.) According to his method the cylinder is placed with its axis perpendicular to the horizon. The object of this is, *first*, that the boring-dust may fall out, and not remain on one side of the cylinder, wearing the cutters; so that in this way the cylinder may be bored through without changing the cutters, by which means a more regular bore is obtained. *Secondly*, That the cylinder may not deviate from its cylindrical form by its own weight, a deviation which is found to take place in large and slender cylinders when laid on their side; the vertical diameter being then less than the horizontal diameter. A similar loss of shape may happen to cylinders that are improperly wedged and strapped down for the purpose of being bored. In this method the cylinder is fixed with screws by the flanges, where it is most capable of resistance, and the screws are disposed so as to press the cylinder equally all round. *Thirdly*, That the operation may be sooner completed, which is effected in consequence of less time being employed to fix the cylinder in this method. In the usual mode of propelling the cutters described above, the attendance of a man is necessary to change the position of the bar on the axis of the pinion, and to raise the weight. This attendance is dispensed with in the machine under consideration, the mechanism for propelling the cutters being as follows: A leather strap passing over the boring-bar communicates the revolving motion of the boring-bar to a wheel, which communicates a slow motion by a train of wheels and pinions to an axis, bearing two pinions which work into two racks; and these racks push the boring-head and cutters slowly forward on the boring-bar, at the same time that the boring-head is revolving with the boring-bar. The velocity with which it is required that the cutters shall advance varies as the diameter of the cylinder varies, the moving power remaining the same. And by altering the train of wheel-work, the cutters may be made to advance with any velocity required.

Figs. 1, 2, 3, and 4, Plate CXI., are different views Murray's of the machine for boring cylinders, invented by Mr Murray of Leeds. Fig. 1 is an elevation, and fig. 2 a plan, of the machine. W, figs. 1 and 2, is the spur wheel, deriving its motion from water or steam, and communicating a revolving motion to the boring-bar. The toothed wheel A, fig. 1, moves round with the boring-bar B on which it is fixed; it gives motion through the wheels D and E, and to the screw S, whose threads act on the two racks, which racks are fixed to the cutter-head H, and revolve with it. The velocity with which the cutter-head is impelled along the cylinder depends upon the number of threads of the screw in a given length, and on the proportions of the wheels A, C, D, and E, to each other. By varying the velocity of the screw, the cutter-head may be made to move in either direction up or down the cylinder. F is a pinion whose axis ends in a square, which may be wrought by a key, so as to bring the cutter-head out of the cylinder, or push it home by the hand when that is required. The cylinder is fixed in its bed by screws passing through two iron rings, as represented at fig. 4; and in this way the cylinder is equally pressed in the different parts of its circumference. Fig. 3 is a transverse elevation of the collar in which the end of the bar at A, fig. 1, turns; X is the gudgeon in which the spindle X, fig. 1, turns. In fig. 3 are also seen the two apertures through which the two racks pass. By this machine also the flanges are turned truly plane, so that the lid of the cylinder may fit on exactly.

The patent granted in 1799 to Mr Murdoch, engineer, Redruth, for new methods of constructing steam-engines

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Billingsley's machine.

Boring. (See *Repertory of Arts*, vol. xiii.), contains some articles relative to boring. He employs an endless screw, which is turned by the moving power, and works into a toothed wheel, whose axis carries the cutter-head; and this method, he says, produces a more smooth and steady motion than the usual mode of fixing the boring-bar immediately on the axis turned by the moving power.

Murdoch's patent. Another article in Mr Murdoch's patent that relates to boring, is his method of forming the cylinder and steam-case. He casts them of one solid piece, and then bores a cylindrical interstice, by means of a boring-tool, made of a hollow cylinder of iron, with steel-cutters fixed to its edge, and acting like a trepan.

The chambers of brass pumps, whose diameter does not exceed a few inches, are fixed within iron rings, by means of screws, in the manner described above when speaking of Mr Murray's apparatus. The rings are made accurately cylindrical by turning, as is also the boring-bar. The boring-bar has four cross arms on its outer extremity, to one of which a handle is fixed, whereby a workman makes the boring-bar revolve. The cutter-head is made to advance along the boring-bar by a screw.

Muskets. 3. BORING THE BARRELS OF MUSKETS AND OTHER SMALL ARMS. Rectangular pieces of iron are forged of a proper length and breadth; these are heated in the fire, and the two long edges, which had been previously thinned off, are welded together on a mandril. The barrel thus formed is fixed by a screw on a carriage that moves in iron grooves; this carriage is propelled towards the boring-bar by a rope which passes over pulleys, and has a weight hanging from its end. The boring-bar is turned by the power of the same mill that turns the grinding-stones for polishing the outside of the barrels. (See *Encyclopédie—planches, Arquebuser*; and Rozier, *Introduction aux Observations sur la Physique*, tom. i. p. 157.) Water is thrown on the barrels whilst boring from a trough placed underneath. After the barrel is bored, the interior surface of the bore is polished by the action of the boring-bar. The barrel is tried during the operation, by an iron gauge of an inch and a half in length, and of a diameter equal to the intended diameter of the musket. When the barrel is bored, it is held to the light and looked through, and if it contains any flaw, the place of that flaw is marked on the outside with chalk, and the barrel is put on the mandril again, and the defective place heated and hammered; the workman also examines with a gauge whether the barrel is crooked. When the bore has no flaws, the barrel then undergoes the operation of the grinding-mill, to the effect of polishing its exterior surface.

Rifled barrels are put on a bench twelve feet long. The boring-bar is guided by a matrix or female-screw, whose spiral curve is similar to the spiral of the rifles intended to be made; the boring-bar being fixed to a male-screw, which passes through the female-screw, and fits it exactly. The female-screw is fixed to the bench, and has four threads and as many furrows; and these threads, in general, return to the point of the circumference from which they set out, or make a revolution in the length of two feet. The male-screw, which fits into the female-screw, has at one end an iron bar attached to it, by which it is put in motion; at the other extremity is fixed the boring-bar, which passes through the barrel to be rifled; and the boring-bar has a cutter fixed in it, which forms a spiral furrow in the barrel when the screw is turned by the handle. The number of spiral threads in rifle-barrels is from three to twelve. Sometimes the threads and furrows of the rifle-barrel are required to be in straight lines; in which case a straight-lined matrix is used. In order that the threads may be placed at an equal number of degrees of the circumference from each other, the bench is furnished with

a brass plate, divided in the same way as the plate of the machine for cutting the teeth of clock-wheels.

Boring. 4. BORING OF PORTLAND STONE, so as to form pipes. Portland stone. That kind of calcareous stone called by geologists oolite, which is quarried for building at Portland, Bath, in the neighbourhood of the city of Paris, and other places, admits of being cut by means of an iron blade, acting as a saw, with sand and water. The more compact limestones and marbles are also cut in this way, but not so easily. The other kinds of stone that can be squared for building, namely, sandstone and granite, scarcely yield to the saw, but are formed into the desired shape by the chisel and hammer. A modification of this mode of working Portland stone consists in forming it into pipes. The method of Sir George Wright, proposed in 1805, is as follows: A hole is drilled through the block of stone, in which a long iron bolt is inserted for the saw to work round as a centre; this bolt forms the axis of the cylinder which is to be taken out, and projects considerably beyond the block at both ends. Another hole is drilled in the intended circumference; and into this the blade of the saw is introduced. The frame of the saw is so disposed, that when it is wrought to and fro, the blade is guided, by means of the centre bolt, so as to describe the intended cylindrical circumference. In this way a solid cylindrical core of stone is detached, and a cylindrical cavity or pipe left in the block. Or the saw may be made to describe a circle without drilling a hole in the centre, by drilling a hole in the circumference, and fixing on the surface of the stone two metallic concentric rings, so that the hole shall be included in the interstice between the rings. The saw is then introduced into the hole, and being worked, it cuts in the circular path formed by the interstice of the rings. See *Repertory of Arts*, second series, vol. viii.

Mr Murdoch's method, for which he obtained a patent in 1810, is preferable in practice to the above-mentioned method. He employs a cylindrical saw to form the pipe. A plug of wood is inserted in the centre of the intended pipe; this plug receives the lower end of a vertical spindle, longer than the intended pipe; and this spindle is square, with sockets sliding on it. On the upper part of the spindle is a pulley or toothed-wheel, by which the spindle is made to revolve. Near the lower end of the spindle is a wheel, having a circumference like a hoop, three inches broad. The diameter of this wheel is somewhat less than that of the pipe to be bored. It regulates the motion, and fits in the inside of a tube of metal attached to the spindle. The diameter of the tube is nearly equal to that of the intended pipe; but its length is greater by two feet. On the lower edge of the tube is a rim of metal, so much thicker than the tube that the groove cut in the stone by the rim may admit the tube to move freely in it. This rim has an edge like that of a stone-cutter's saw, and in fact performs the office of a saw. The tube is caused to make a reciprocating circular motion round the spindle. There is a cistern placed above the tube, for the purpose of conveying a mixture of sand and water into the cylindrical groove formed in the stone, whilst the machine is working.

Stone pipes, made in the above described way, have been tried for conveying water in London. They were joined by means of Parker's cement, which consists of clay ironstone, burnt, and ground to a fine powder. This was the best material that could be got for forming the joints; but these joints cracked and allowed the water to escape, in consequence of the motion of the carriages on the streets under which the pipes were laid; and the adventurers found that they "had hewed out unto themselves broken cisterns, that could hold no water."

5. BORING OF ROCKS, for the purpose of splitting them by means of gunpowder. We have already treated this sub-

Boring. ject under **BLASTING**, and shall only add here the mode of boring for this purpose practised in the mines of Germany.

A boring bar of steel is applied to the stone by its lower end, whilst its upper extremity is struck with a hammer of two pounds in weight. The form of the lower end of the boring-bar is various; some were fashioned like a swallow's tail, ending in two points; but this form is no longer in use. Another kind has the end formed by the intersection of two wedge-shaped edges, with a point at each corner, and one in the middle. A third kind has the end composed of four pyramidal points, with cavities between them. A fourth kind, which is that most frequently used, has the end in form of a wedge. (See Rinman, *Bergwerks Lexicon*. Stockholm, 1789, tab. ii.) Three sizes of boring bars are employed to make one hole, the first is the shortest and thickest, the second is longer and less in diameter, the third is the longest and the least in diameter. When a hole is to be made, a small opening is first formed with a pick in the place where the boring-iron is to be applied, and all pieces of the rock are removed that might impede the action of the powder. Then the workman uses the first boring-iron, which he drives with blows of the hammer till the boring-iron can reach no farther; he then employs the second and third boring-bars in like manner; and after each stroke of the hammer, the boring-bar is turned round a portion of the circumference. The stone, pulverized by the action of the boring-bar, as it hinders the progress of the operation, must be removed from time to time by means of an iron-rod, terminated at right angles by a small round plate. From the different diameter of the boring-bars, it follows that the end of the hole is of a smaller diameter than that of the beginning. The depth to which the hole is bored is proportioned to the nature of the rock. It varies from 10 to 15 and 20 inches. When the rock is solid a great way round, a deep hole is not used, because the resistance at a considerable depth, in such a situation, is too great; so that the explosion does not split the rock round the powder chamber, but acts upwards against the ramming, where it meets with less resistance. But if the rock be laid bare on one side, a deep hole is advantageous. Water is poured into the hole during the operation, to facilitate the action of the boring-iron. When the hole is perpendicularly downwards, it is kept full of water; when the hole is driven from below upwards, no water can be used. The water must be taken out, and the hole dried, before the cartridge be introduced. The most frequent case is, that one man performs the work, holding the boring-iron in his left hand, and striking on it with the two-pound hammer in his right. Sometimes two men are set to do the work, one holding the boring-iron, whilst the second strikes it with a hammer of four or five pounds: this is done where it is required to make the hole thirty or thirty-six inches deep. When a still deeper hole is wanted, two men strike alternately with heavier hammers.

Wooden pipes.

6. **BORING OF WOODEN PIPES** is done by means of a long auger, beginning with one of small diameter, and proceeding to employ successively spoon-formed augers of larger diameter. Notwithstanding the frequent employment of cast-iron pipes, some wooden pipes are still used for conveying water in London: they are of elm, which is the kind of tree most frequent in the neighbouring country. A pipe is bored out of one trunk of elm, and the bark is left on. When a tree is to be bored, it is fixed on a carriage, with a rack on the under part. This rack fits into a pinion, the axis of which passes through gudgeons on a fixed frame. On the axis of the pinion is a ratchet wheel, moved by two catches, which derive their motion from the wind or water power that turns the auger; and the pinion is moved in a direction that brings the tree towards

the auger. See a figure in Belidor, *Architecture Hydraulique*, i. 1, 341. This apparatus is the same as the one employed in saw-mills. In the boring of pipes for the water-works in London, the tree is made to advance by ropes, which pass over a windlass wrought by men, whilst the auger is turned by a horse-mill. Wooden pipes are frequently bored by an auger having at its outer end a wooden drift or handle, which is put in motion by the workman. The trees are placed on tressels, and there are also tressels of a convenient height that support the auger; there is also a lathe to turn one end of the tree conical, so as to fit into a conical cavity in the end of the adjoining tree, and thus form a water-tight joint. The end of the tree which receives the adjoining pipe within it has a surface at right angles to the axis of the pipe. Into this surface is driven an iron hoop, the diameter of which is some inches greater than the diameter of the aperture of the pipe. This precaution prevents the tree from splitting when the conical end of the next tree is driven home. When the tree is crooked, a bore is driven in from each end, and the two bores meet, forming an angle. An auger whose stalk is formed spirally for some way up is figured in Bailey's *Machines of the Society of Arts*. The objects of this is that the chips may be delivered without taking the auger out of the hole.

There is a patent granted in 1796 to Mr Howell, coal-master, of Oswestry, for boring wooden pipes by a hollow cylinder made of thin plates of iron, about an inch less in diameter than the hole to be bored. To one end of this cylinder is fixed a flange about a quarter of an inch in breadth, and one part of this flange is divided, so that, being of steel, a cutter is formed thereby. The object of this method is to bore out a solid cylinder of wood, capable of being converted into a smaller pipe, or of being applied to some other use in carpentry. (*Repertory of Arts*, vol. ix.) This kind of borer is like the trepan, which is a hollow cylinder of steel, saw-toothed on the edge, and, when made to revolve rapidly on its axis in the hand of the surgeon, it saws or bores out circular pieces of the flat bones of the head. (B. B.)

BORISSOGLEBSK, a circle of the Russian government of Tambow, extending over 2412 square miles, with a population of 65,400 persons. The chief place, a city of the same name, on the river Khoper, contains about 500 houses and 3300 souls. Long. 42. 1. E. Lat. 51. 23. N.

BORISTHENES, or **BORYSTHENES**, in *Ancient Geography*, the largest river of Sarmatia Europæa, and described by Mela, after Herodotus, as running through a cognominal people; as the pleasantest of all the rivers in Scythia, calmer than any of them in its course, and very agreeable to drink; as producing rich pastures, and large fish, of the best flavour, without bones; as flowing a great distance, and rising from springs unknown; and as being navigable for a course of about forty days. It is now called the *Dnieper* or *Nieper*.

BORKEN, a circle in the Prussian government of Munster, and province of the Rhine. It is on the frontiers of the kingdom of the Netherlands, and extends over 307 square miles, or 196,480 acres. It contains four small cities, nine villages, and forty-four hamlets, with 5703 houses and 36,170 inhabitants. It is an undulating but heathy and moorish district, yielding chiefly buck-wheat and flax. Some little iron, much wood, and some coarse wool, are the chief productions. The capital, of the same name, situated on the river Aa, contains 450 houses and 2437 inhabitants. The whole district belonged formerly to the family of Solm Solm, now mediatised.

BORKUM, an island of Hanover, on the coast of East Friesland, situated between the mouths of the East and West Ems, and included in the bailiwick of Grutsiel. It

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Borlase. is about twelve miles in circumference, and so low in the middle that it is separated into two parts at high water. A considerable proportion of the inhabitants consists of seafaring people, and the remainder draw their support from the rearing of cattle, or in picking up the fragments of vessels wrecked on their coast. It has a governor, a minister of the Calvinistic faith, and a schoolmaster.

BORLASE, DR EDMUND, an eminent physician and English writer in the seventeenth century, was the son of Sir John Borlase, master of the ordnance, and one of the lords justices of Ireland in 1643. He studied in Dublin College, and afterwards at the university of Leyden, where he took the degree of doctor of physic. He afterwards practised physic with success in the city of Chester, and was incorporated doctor of the faculty in the university of Oxford. Among the books which he wrote and published are the following: 1. Latham Spaw in Lancashire, with some remarkable cases and cures performed by it, London, 1670, 8vo; 2. The Reduction of Ireland to the crown of England, London, 1675, 8vo; 3. The History of the Irish rebellion, London, 1680, 8vo; 4. Brief Reflections on the Earl of Castlehaven's Memoirs, relative to the part which he took in the Irish War, London, 1682, folio. The precise time of his death is uncertain.

BORLASE, William, a learned antiquary and naturalist, was descended of an ancient family in Cornwall, and born at Pendeen, in the parish of St Just, on the 2d February 1695-6. He was put early to school at Penzance, and in 1709 removed to Plymouth. In March 1713 he was entered of Exeter College, Oxford; and in June 1719 he took his degree as master of arts. In 1720 he was ordained as priest, and in 1722 instituted to the rectory of Ludgvan in Cornwall. In 1732 Lord Chancellor King presented him to the vicarage of St Just, his native parish; and this, with the rectory already mentioned, were all the preferments he ever obtained. In the parish of Ludgvan are rich copper works, abounding with mineral and metallic fossils, which, being a man of an active and inquisitive turn of mind, he collected from time to time, and thus was led to study at large the natural history of his native county. He was also much struck with the numerous monuments of remote antiquity that are to be met with in Cornwall; and therefore, enlarging his plan, he determined to gain as accurate an acquaintance as possible with the learning of the Druids, and with the religion and customs of the ancient Britons before their conversion to Christianity. In 1750 he was admitted a fellow of the Royal Society; and in 1753 he published in folio, at Oxford, his "Antiquities of Cornwall," a second edition of which was published, in the same form, at London, 1769, with the title of "Antiquities, Historical and Monumental, of the County of Cornwall; consisting of several essays on the ancient inhabitants, Druid superstition, customs and remains of the most remote antiquity in Britain and the British isles, exemplified and proved by monuments now extant in Cornwall and the Scilly islands; with a vocabulary of the Cornu-British language." His next publication was "Observations on the ancient and present state of the islands of Scilly, and their importance to the trade of Great Britain." Oxford, 1756, 4to. This was merely an extension of a paper which had been read to the Royal Society in 1753. In 1758 appeared his "Natural History of Cornwall," Oxford, folio. After these publications, he transmitted a variety of fossils and remains of antiquity which he had described in his works, to be deposited in the Ashmolean Museum; for which, as well as other benefactions of a similar kind, he received the thanks of the university, in a letter from the vice-chancellor, dated the 18th November 1758; and in March 1766 the degree of doctor of laws was conferred on him. He died

in 1772, at the age of seventy-seven, leaving two sons out of six, whom he had had by a lady he had married in 1724. Besides his literary connections with many ingenious and learned men, he had a particular correspondence with Mr Pope; and there is still extant a large collection of letters written by that poet to Dr Borlase. He furnished Pope with many of the materials, consisting of curious fossils, which formed his grotto at Twickenham; and Dr Borlase's name in capitals, composed of crystals, might be seen in the grotto. It is with reference to this circumstance that Pope says in a letter to Borlase, "I am much obliged to you for your valuable collection of Cornish diamonds; I have placed them where they may best represent yourself, *in a shade, but shining.*" Besides the works above mentioned, he sent many curious papers to the Philosophical Transactions, and had in contemplation several other works.

BORMIO, a town of the Austrian kingdom of Lombardy, in the delegation of Como. It is situated at the foot of a lofty hill of the same name, is well built, and contains about 2000 inhabitants. Long. 9. 51. E. Lat. 46. 28. N.

BORN, IGNATIUS, BARON VON, counsellor in the aulic chamber of the mint and mines at Vienna; of considerable eminence in the scientific world as a mineralogist and metallurgist, and a promoter of science; was born of a family that had the rank of nobility, at Karlsburg, in Transylvania, in 1742; and died in 1791. He was educated in a college of the Jesuits at Vienna, and afterwards entered into that order, but continued a member only during sixteen months. He then went through a course of study in law at Prague, and afterwards travelled into Germany, Holland, and France. On his return to Prague he engaged in the study of mineralogy.

The mines in the dominions of the house of Austria are very important, and give livelihood to a numerous population, more particularly in Hungary, Transylvania, and the Bannat, and in Styria and Carinthia. Idria produces mercury; Bohemia, tin and cobalt; and the other metals are obtained in sufficient abundance, not only to supply the internal trade of the nation, but also for export, either in the form of raw metal, or manufactured into various instruments. A revenue accrues to the public treasury from the mines in various ways. Some, as those of Schemnitz, Cremnitz, and Idria, are wrought on account of government. A tenth part of the produce of all mines wrought by private adventurers goes to government as a royalty. Government has a right of pre-emption of all metals, and an exclusive right of buying all gold and silver, the produce of the country, at a stated price. The annual quantity of gold and silver got from the mines of Hungary and Transylvania, and coined into money at the mint, during the reign of Maria Theresa, amounted in value to about L.300,000 sterling. The mines in other parts of the dominions produced likewise a considerable quantity. Maria Theresa, seeing their importance, did much for the regulation of the mines; and, with a view of diffusing the knowledge of mineralogy amongst the nobles, many of whom were proprietors of mines, she had lectures on that science delivered in the universities. The administration of the revenue arising to government from this source is conducted by a board composed of managers, overseers, assayers, and other officers, who are brought up in the knowledge of metallurgy and mineralogy, and reside at the mines. The operations of these functionaries are under the control of the aulic chamber of the mint and mines at Vienna, which keeps a set of books, in which all the transactions relative to the mines, and their situation and state, are digested and registered. An administration thus constituted offers a field of some preferment. Von

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Born.

Born chose to devote himself to this line of life, and was received into the department of the mines and mint at Prague in 1770.

About this time he met with an accident which nearly proved fatal. In the course of a mineralogical journey through Transylvania, he came to Felso-Banya, where the gang is rendered brittle and detached from the rock, by exposing it to the flames of wood heaped up in the mine and set on fire. Having gone into the mine soon after the combustion had ceased, and whilst the air was hot, and charged with arsenical vapour, and returning through a shaft which was occupied by a current of this vapour, he was deprived of sensation for fifteen hours, and after recovery continued long to suffer from a cough and general pain. Some time after this accident he was affected with violent colics, which a large dose of opium removed, but left him with a numbness of the lower extremities, and lameness in the right leg. In the latter part of his life he was deprived of the use of his legs. All these calamities, which, however distressing, did not repress the activity of his mind, were considered as the consequences of the arsenical fumes he had inhaled at Felso-Banya.

One of the chief objects of his exertion was to introduce amalgamation in Hungary, in place of smelting and cupellation heretofore used in that country, for extracting silver from the ores. Pliny and Vitruvius speak of the use of mercury in collecting small disseminated particles of gold. On the arrival of the Spaniards in America, the Peruvians extracted the silver from the ore by smelting-furnaces, exposed to the wind on the tops of hills. The quicksilver mines of Guancabellica in Peru were discovered in 1563, and three years thereafter the Spaniards began to employ amalgamation. Alonzo Barba, an Andalusian, further improved the process by the addition of heat. Amalgamation had been practised in Europe for collecting silver and gold when they existed in visible metallic particles, but not in the case of ores where the gold and silver are invisible even with the aid of a microscope. Soon after its application to ores in America, an attempt was made by a Spaniard to introduce this operation for extracting silver from the ores in Bohemia, but without success. Gellert, Walerius, and Cramer, had written against the use of amalgamation when applied to ores. But Von Born seeing its advantages, particularly in the saving of fire-wood, which had become scarce in many parts of Hungary, set about examining the accounts given by authors of the different processes used in Mexico and Peru; repeated these processes experimentally, first in the small way, leaving out the ingredients that a knowledge of the chemical action of bodies showed to be unnecessary; and afterwards had the process carried on in the great way for several months near Schemnitz, under the inspection of Ruprecht. At this time he published his book *On Amalgamation*. It contains a history of amalgamation, and extracts from different authors describing the South American methods. This occupies nearly one half of the volume. He then gives the chemical theory of operation in its different steps, describes the method he had adopted at Schemnitz, and gives figures of the machinery employed.

Von Born met with much opposition in his attempts to introduce amalgamation. He says that some book-learned chemists, who never had handled a retort, and some mine overseers, when he first set about his experiments, declared that it was impossible to obtain silver by that method. After he had succeeded in getting silver from the ore publicly at Vienna, his detractors came forward with doubts and long calculations, showing that the process was inferior to that already in use. At last his process was tried successfully in the great way by orders of

Joseph II. at Schemnitz; and then the calculators and doubters shrugged up their shoulders, saying, "It is only the old Spanish process of amalgamation." Born.

He obtained from the emperor an order that his method should be employed in some of the mines belonging to government, and that he should receive a third part of the savings arising from the improvement during the first ten years, and four per cent. of this third part of the savings for the next twenty years.

He was a satirist, without possessing the qualities of style that are necessary to attain a high rank in that class of writers. The *Staats Peruche*, a tale, published without his knowledge in 1772, and an attack on Father Hell, the Jesuit, and king's astronomer at Vienna, are two of his satirical works. The satirical description of the *Monastic Orders*, written in form of an academic inaugural dissertation, entitled *Monachologia*, is generally ascribed to Von Born. In this piece the monks are described in the technical language of natural history. Von Born, however, was not deeply versed in the phraseology of Linnæus; and it is the opinion of some good judges of the subject, that the language at least was furnished by Herman, professor of medicine in the University of Strasburg, and author of the very ingenious work on the mutual affinities of animated beings, entitled *Tabula Affinitatum Animalium Commentario illustrata*. But although the technical language may not be Von Born's, the sentiments are such as he was known to profess; for the topic was so great a favourite with him, that he found room for invectives against the monks even in his book *On Amalgamation*. The monks in the Austrian dominions were not then in a situation to obtain redress against this lampoon; for it was published in 1783, when Joseph II. had suppressed many of the monasteries in different parts of his dominions, and transferred their property into his treasury, allowing but a scanty sum for the subsistence of the members of these communities.

Von Born was well acquainted with Latin, and the principal modern languages of Europe. He also possessed information in many branches of science not immediately connected with metallurgy and mineralogy, which were his professed pursuits. He had a good taste in the graphic arts, and his printed works are ornamented in a neat manner with vignettes illustrative of the subject.

His inclination led him to engage in politics; and, in particular, he took an active part in the political changes in Hungary. After the death of Joseph, the diet of the states of Hungary passed a great many acts, rescinding the innovations of that scheming ruler, which tended to force upon them German governors and laws, and even the German language. This diet conferred the rights of denizen on several persons of distinction who had been favourable to the cause of the Hungarians, and, amongst others, on Von Born. At the time of his death he was employed in writing an historical work in Latin, entitled *Fasti Leopoldini*, probably relating to the prudent conduct of Leopold II., the successor of Joseph, towards the Hungarians.

He was of a middle size, slender make, and dark complexion; his eye was penetrating, and his countenance agreeable. His constitution was delicate even before his accident. He was a pleasant companion, and fond of society. He lived in splendour, and his house at Vienna was resorted to by scientific men of all nations. It is likely that his profits from the process of amalgamation were not considerable, at least they were not sufficient to put his fortune to rights, as his affairs at his death were in a state of insolvency. His family consisted of a wife and two daughters, who survived him. (See Townson's *Travels in Hungary*; and Pezzil, *Ostreich Biographien*, 1792.)

Born.

The following is a list of his published writings, and of the works of others which he edited.

Lythophilacium Borneanum, 1775, 8vo. This is a catalogue of his collection of minerals, which collection he afterwards sold to Mr Greville; and it forms a part of the magnificent Greville collection of minerals purchased from the heirs of that gentleman by parliament, and deposited in the British Museum. This catalogue is arranged according to the system of Cronstedt, with the nomenclature of Linnæus.

Index rerum naturalium Musæi Cæsarei Vindobonensis. Pars. I. Testacea. Vindob. 1778, fol. maj. This splendid volume, which contains the description and figures of the shells in the museum at Vienna, was composed by order of the Empress Maria Theresa. The shells are arranged according to the method of Linnæus. Von Born's knowledge in this department of Natural History was not profound, so that he needed some assistance in composing the work. The shells only are described; of the animals to which they belong little is said. Joseph II. coming to the throne, and being fully occupied with a multitude of innovations and vast schemes for the aggrandisement of the house of Austria, the project of continuing the work, so as to form a description of the whole museum, was laid aside.

On the Amalgamation of Ores containing Gold and Silver, in the German language, published in 4to in 1786. Of this work something has been already said above. There is a translation of the work into English, by Raspe, a Hanoverian, once professor at Hesse-Cassel, and who afterwards resided in Britain, where he was sometimes employed as a viewer of mines.

Catalogue méthodique et raisonné de la Collection des Fossiles de Mademoiselle Eleonore de Raab, à Vienne, 8vo, 1790. This catalogue is drawn up so as to form a system of mineralogy, each species of mineral being carefully described, and arranged systematically. It was much esteemed, and cited by mineralogical writers in its time, but has been superseded, like other treatises, by more recent works, on account of the great additions that have been continually making to the science.

He edited the Jesuit Poda's description of the machines used in the mines of Schemnitz.

Ferber's Letters from Italy were written to and edited by Von Born. Ferber and he were in habits of great intimacy; and Ferber, in return, published the letters that Von Born addressed to him during his excursion in Transylvania, &c. in 1770, entitled *Briefe über mineralogische gegenstände auf seiner reise durch das Temeswarer Bannat, Siebenburgen, Ober und Nieder Hungarn*. Frankf. 1774. To this work is prefixed a well-engraved portrait of Von Born. There is an English version by Raspe, and a French one, with notes, by Monnet.

He lent his assistance to the first three volumes of a work published in German, entitled *Portraits of Learned Men and Artists, natives of Bohemia and Moravia*.

There are some papers of his in the *Abhandlungen der Böhmischer gesellschaft den Wissenschaften*.

The Transactions of a Private Society at Prague, in Bohemia, for the improvement of mathematics, natural history, and the civil history of the country, contains several papers written by him. He was the founder of this society.

He published an annual periodical work in German, entitled the *Philosophical Transactions of the Masons' Lodge of Concord at Vienna*. This masons' lodge, of which Von Born was the founder and patron, employed a part of its meetings in scientific pursuits. This, as well as other societies of a similar nature, was tolerated by Joseph II. for some time; but he afterwards imposed restraints that

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caused their dissolution. Von Born was also a zealous member of the Society of Illuminati; and when the Elector Palatine of Bavaria suppressed the masonic societies in his dominions, Von Born being a member of the Academy of Sciences at Munich, was required to declare, within eight days, whether he would withdraw from the masonic societies. He returned an answer, in which he praised the principles of the free-masons, and resigned his place in the academy, by sending back his diploma.

He wrote some articles in the German work published by Trebra, mine-director at Zellerfeld in the Hartz, entitled a *System of Instruction in the Art of Working Mines*, 4to; also *Observations in support of the Metallization of the Alkalis*, in Crell's *Annals*, 1790, 1791. Ruprecht and Tondi thought at that time that they had reduced the alkalis and barytes to a metallic state, by the strong heat of a furnace urged by bellows; but it was afterwards found that the metallic substance thus obtained was phosphate of iron, proceeding from their crucibles and fluxes. Sir Humphry Davy was the first who obtained any of the alkaline class of bodies in a metallic state; and this he accomplished by the intense heat excited by a galvanic battery, many years after the time here spoken of.

Relatio de Aurilegio Daciæ Transalpinæ, 1789, in the *Nova Acta Academiæ Naturæ Curiosorum*, tom. viii. p. 97. This is an account of the method employed in Transylvania in collecting gold from the sand of the rivers. The auriferous sand generally contains iron, attractable by the magnet. It is washed on a sloping board seven feet long and three feet broad, covered with a woollen cloth, having a dish-shaped cavity at the upper end, and inclined to the horizontal plane at an angle of twenty or twenty-five degrees. Only a very scanty livelihood can be gained by this employment. It is carried on by the poorer classes of the country people, and in some districts by bands of the people called gipsies. The king's collectors buy the gold from the gold-washers at a stated price, to the amount of more than 800 pounds weight annually. (B.B.)

BORNEO, an island forming part of the great East Indian Archipelago. Next to New Holland, which may be considered as a species of continent, it seems indisputably the largest in the known world. It reaches from about 7° north to 4° south latitude, and from 109° to 118° east longitude. Its length may be estimated at 750 miles, its greatest breadth at 600, and its average breadth at 350. It exhibits the usual insular structure, a mass of lofty mountains in the centre, sloping gradually down to level and alluvial tracts along the sea shore. It is watered by many fine rivers, of which those of Borneo Proper, Banjar Massin, and Passir, are navigable for more than fifty miles above their junction with the sea. All these rivers were understood by Dr Leyden to be derived from an immense lake in the interior, called the Sea of Manilla. It is more probable that they all rise from the mountainous district of greatest elevation. The interior of Borneo is covered with immense forests, filled with wild animals, particularly ourang-outangs. A great part of the coast is marshy, so that it is in portions only that it displays the exuberance of tropical fertility. Of all the East Indian islands, Borneo ranks lowest as to civilization and improvement. Nothing, perhaps, has tended so powerfully to check its progress as the solid and unbroken form of its coasts, destitute of those large bays or inland seas which have always proved the nursery of commerce.

The Portuguese discovered Borneo in 1526, though, from the superior wealth promised by the Spice Islands, it attracted comparatively little attention. Yet they, as well as the Spaniards, the Dutch, and the English, formed establishments on different parts of the coast; but the small force defending them, and the fierce animosity of the na-

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Borneo.

Borneo. tives, made their tenure generally of very short duration. The physical structure of Borneo, the vast forests, mountains, and jungles of the interior, obstruct communication between the different parts of its coast, as completely as if an extent of sea had intervened. It is thus split into a number of petty districts, entirely detached from each other, and which cannot be satisfactorily described, unless in detail. In this manner, therefore, we shall consider the principal states, beginning with Borneo Proper, and thence making the circuit of the island; after which we shall attempt some general views of its population and commerce.

Borneo Proper occupies the northern coast, and is reckoned a state of great antiquity. The soil is comparatively fertile, supplying rice sufficient for the consumption of the inhabitants, as well as most of the camphire for which the island is celebrated. The city, called also Borneo, is built upon alluvial ground, about ten miles above the mouth of the river of the same name. It is compared to Venice; canals are conducted through every street, and all business is conducted in boats, usually rowed by women. The houses are built upon posts, and ascended to by ladders. The river is navigable for large vessels considerably above the town; but there is a bar at its entrance, over which there is scarcely a depth of seventeen feet at high water. The sultan is treated with those marks of peculiar respect which in this part of the world usually indicate an ancient dynasty; but the chief power rests in the council of the nobles. This state has little communication with Europeans; and the English, who were accustomed to deal to a small extent in piece-goods, have in a great measure discontinued the traffic. The commerce of this city and district is almost entirely engrossed by the Chinese, who bring annually from Amou four or five junks, of about 500 tons burden. As the neighbourhood abounds in excellent timber, they frequently build their junks here, and carry them away loaded with the commodities of the country.

On the eastern coast of Borneo, Mangedava and Pappal are populous, fertile, and well-watered districts. Malloodo possesses these advantages in a still superior degree, and grows also a large quantity of rattans. Tiroom produces sago in abundance, and birds' nests more copiously than any other part of the eastern Archipelago. None of these states, however, are much frequented by or known to Europeans. The chief state on the eastern coast is Passir, situated about fifty miles up a river of the same name. This district is very low and flat; and, were it not cooled by the sea breezes, would be intensely hot. Being marshy and filled with woods, it is extremely unhealthy. The town is said not to contain above 300 wooden houses, which are built along the river. The sultan has a palace and wooden fort along the northern bank. The people of Passir have an extremely bad reputation as to their conduct in mercantile transactions. They use false weights and measures, manufacture counterfeit articles, and embrace, in short, every opportunity of cheating that offers. The English East India Company made an attempt, in 1772, to establish a factory here, but it did not succeed.

Banjar Massin is the principal state on the southern coast of Borneo; and, like the others, it owes its prosperity to a large river, on the banks of which it is situated. This river is five or six fathoms deep; but, unfortunately, the bar does not allow above twelve or thirteen feet of water, and requires the aid of the tide to produce even that depth. Ships, however, may anchor in the port of Tombangou or Tombornio, near the mouth of the river, where they are well supplied with water and provisions. Banjar Massin, in 1780, was estimated to contain a population of 8500 Mahomedans, chiefly Javanese, with a considerable proportion of Bugis, Macassars, and Malays. The

Chinese are also pretty numerous. The sultan resides at Martapura, about three days' journey up the river, to which place he is attached by the circumstance of its being an uncommonly fine hunting station. The district of Banjar produces gold and diamonds, both of superior quality to those found in other parts of the island. Pepper is so abundant that, in a commercial view, it may be considered as the staple commodity. The iron is very excellent, and peculiarly fit for steel; though Dr Leyden asserts that the inhabitants do not themselves understand the art of manufacturing it. In 1700 the English East India Company formed a settlement at Banjar Massin. A rage then prevailed for multiplying establishments, and the present one was soon so far extended as to equal that of Calcutta. But the expectations of extensive trade, which prompted to such an enlargement, were in a great measure illusory; a thousand tons of pepper being the most valuable article drawn from the settlement. Before the company could be fully aware of its unproductive nature, however, this settlement was brought to a premature end. An attack was made by the natives on so great a scale, and with such fury, that, though repulsed, it seemed to leave no choice but the immediate evacuation of the factory, without even removing the stores. The damage sustained on the occasion is estimated at 50,000 dollars.

Succadana, or, as Dr Leyden calls it, Sacadina, was anciently the most powerful state on the western coast of Borneo. The Dutch began to trade there in 1604, but they soon afterwards attached themselves, in preference, to Sambas. In 1623 they abandoned their factory at Succadana. In 1786 they united with the sultan of Pontiana in an expedition against this place, which they took and entirely destroyed. It appears to have been since rebuilt, but is entirely in the hands of the Malays, and scarcely ever visited by Europeans. Pontiana is a state of very recent origin, but it now exceeds in wealth and power all others upon the western coast of Borneo. This distinction it owes to the wisdom of the Arab prince by whom it was founded. He renounced from the first the pernicious policy, almost universal in these petty states, of embarking in trade, and monopolizing its principal articles. He confined himself to his proper functions, of dispensing justice, and securing protection to all, of whatever country or religion, who resorted to his dominions. Under this salutary policy Pontiana soon rose to be the greatest emporium in those seas. It is situated on a large river, formerly called Laua, and the country behind produces diamonds the most abundantly of any district in Borneo. The Dutch established a factory here in 1776, and maintained ever after a good understanding with the sultan. In 1813, after the British force had taken possession of Batavia, that prince, dreading an attack from Sambas, solicited the protection of a British garrison, which was immediately sent; and he afterwards assisted our troops in the reduction of Sambas. Momparwa, situated a little to the north of Pontiana, is the best market for opium upon this coast. The city lies nineteen miles up the river, the entrance of which is obstructed by a bar and by several small islands. This is probably the same district called Mattan by Dr Leyden, who says that the king possesses the finest diamond in the world, for which a high price was offered by the Dutch, which he refused to accept. Sambas is situated about thirty miles up the river of the same name. Like most other towns in Borneo, it is built of timber and bamboos, and raised by stakes above the swampy foundation. Sambas has always been a powerful state, but for some time past has devoted itself so entirely to piracy as to render its existence scarcely compatible with that of its civilized neighbours. Upon this principle the British, in 1812, undertook an expedition against it;

Borneo. but they were repulsed with great loss in the attack, and suffered still more from the malignant influence of the climate. In the following year, however, a new expedition was undertaken under Colonel Watson, who, on the 3d of July, carried the fort by storm, and obliged the rajah to retire into the interior of his dominions.

On a general view of the state of culture and civilization in Borneo, Mr Hamilton estimates the population at 3,000,000, which we should suppose to be, rather above than under the truth. The interior is entirely occupied by a native race, called variously, according to the parts of the island which they inhabit, Dayak, Idaan, and Tiroon. Those which subsist by fishing are commonly called Biajoos. The appellations of Horaforas and Maroots have also been applied to these races. The whole may be considered as one, almost savage, and nearly similar to that which occupies the interior of Sumatra. Some, indeed, cultivate the ground, some display considerable industry in fishing, and a few employ themselves in collecting gold; but their institutions in general indicate the very rudest state of human society. It has been strongly asserted that they devour the flesh of their enemies; an assertion not noticed by Dr Leyden, and which has in many instances been made without foundation. All accounts agree, however, as to the existence of another truly savage custom, by which every man is debarred from the privilege of matrimony till he has, with his own hand, cut off the head of an enemy. Those, therefore, who are desirous of entering into that state form themselves into what Dr Leyden calls *head-hunting* expeditions. They make an inroad into the territories of a neighbouring tribe, and, if their strength appears sufficient, endeavour to effect their object by force; if otherwise, they conceal themselves behind thickets, till an unfortunate individual passes, whom they can make their prey. Some are also said to immolate human victims on the altars of their divinities.

The inhabitants of the towns along the coast consist chiefly of that race so universally diffused throughout the Indian islands under the name of Malays. This name, to an European ear, has usually suggested every extreme of perfidy and atrocity. We have perused, however, a very different estimate of their character, formed by an intelligent gentleman, who spent several years in this part of India. He describes them as honest, frank, simple, and even gentle in their manners, decidedly superior, in a moral view, to the degenerate Hindoos. The sanguinary deeds which have exposed them to so much reproach he ascribes to a proud and almost chivalrous sense of honour, which makes them regard blows, or any similar personal insult, as an offence only to be expiated by blood. The coarse and unfeeling treatment which they often experience from Dutch and Chinese masters drives them to these dreadful extremities. Piracy, however, is a vice of which this race cannot be acquitted; and the western coast of Borneo, situated on the great naval route to China, may be viewed as the grand field for its exercise. To a poor and hardy race, who see half the wealth of Asia passing along their shores, the temptation is almost irresistible. Like the Arabs, they have formed for themselves a code of morality, in which plunder is expunged from the list of vices. Yet, though individually brave, they possess no skill or discipline which could render them formidable to the crew of an European vessel. The cowardice of the Lascars, by whom Indian trading vessels are usually navigated, is the only circumstance which has made our trade suffer so severely from their ravages.

Next to the two classes above enumerated, the most numerous are the Chinese. These, by the gentleman above alluded to, are considered as the most valuable sub-

jects whom an uncivilized state can receive into its bosom. The difficulty of finding subsistence in their own country has led them to emigrate in vast numbers into Borneo. Nothing, perhaps, except the law which prohibits females from leaving the empire, could have prevented this almost unoccupied island from being entirely filled with a Chinese population. From this circumstance, however, the colonists are composed entirely of men in the vigour of life, and of the most enterprising and industrious character. Their chief settlement is at Sambas, on the western coast, where the numbers cannot be estimated at less than 30,000, composing a sort of independent state. Their almost sole occupation is that of extracting the gold which abounds upon this coast. It is found in alluvial soil, and is purified by the simple process of passing a stream of water over the ore. The processes employed for this purpose are daily improving, and it is conceived that the produce here and at other quarters will be sufficient to remove all future apprehensions of the East proving a drain upon the gold of Europe.

The commerce of Borneo, though not equal to its extent and natural capacities, is by no means inconsiderable. Gold is its principal export. Mr Milburn estimates the annual quantity exported at 200 peculs, or 26,000 lbs. avoirdupois, which would coin into upwards of 900,000 guineas. Like some other commodities, it is divided, by a grotesque scale, into three kinds, called the head, the belly, and the feet; the first being the best, and the two others gradually diminishing in value. Camphire is exported to the extent of thirty peculs (3990 lbs.), all to China, where it is more esteemed than that of Sumatra. The singular Chinese luxuries of *biche de mer* or sea slug, and edible bird-nests, are found in Borneo, as over all the Indian Archipelago. Pepper to a considerable amount, canes and rattans of various descriptions, sago, and a little tin, complete the list of exports. The chief import is opium to a very great extent, with piece-goods, hardware, coarse cutlery, arms, and toys. By far the greater proportion of the trade is in the hands of the Chinese. (Leyden's Description of Borneo, in the *Asiatic Journal*; Hamilton's *Gazetteer*; Milburn's *Oriental Commerce*; MS. of a Gentleman long resident in India.)

BORNOU, an extensive kingdom, situated in the eastern part of interior Africa. With the exception of Houssa, now subject to the sultan of the Fellatahs, it is superior in power and influence to any other state in that quarter of the continent. Major Denham, to whom we are indebted for the only full and authentic description of this country, places it between the 12th and 18th degrees of east longitude, and the 10th and 15th of north latitude, which would form an extent of nearly 400 miles in every direction. His own map and description, however, obliges us to restrict these dimensions to little more than one half. Bornou is bounded on the west by Soudan or Houssa, on the east by the lake Tchad, on the north by the Great Desert, on the south by the kingdoms of Begherme, Loggun, and Mandara.

The grandest natural feature of this country consists in the lake called the Tchad, one of the largest expanses of fresh water in the world, and well entitled to the appellation of an inland sea. Its limits have not been very precisely ascertained, but cannot fall much short of 200 miles in length and 150 in breadth. A remarkable variation, however, takes place, according as the rivers by which it is fed are swelled by the tropical rains, or their channels reduced by the continuance of the dry season. At this period the waters on every side recede, and leave uncovered a tract of many miles in extent, to be again overflowed when the rains have swelled the lake. The inhabitants, however, derive little advantage from the short and precarious interval during which they

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have access to this portion of their territory. There is neither leisure nor opportunity to bring it under regular culture; and the luxuriant fertility derived from the inundation is wasted in producing a rank vegetable growth of grass from ten to twelve feet in height, with impenetrable thickets of trees and underwood. Man scarcely dares to penetrate into these gloomy regions, which are filled by numerous and formidable wild animals, elephants, lions, hyenas, and enormous broods of the serpent species. These creatures, when the inundation comes on, seek refuge in the cultivated and inhabited tracts, where their arrival diffuses consternation and dismay.

The rivers by which this great expanse of water is fed are the Yeou and the Shary. The former, which enters it from the west, excited great interest on its first discovery, from being considered, or at least suspected, to be a continuation of the Niger of Park. Further observation has completely disproved this supposition, and shown it to be a river of only secondary magnitude. Rising in a range of hills to the south of Houssa, it flows first north, then eastward through Bornou, till it falls into the Tchad; but it never, unless when swollen by the rains, presents any great body of water. The Shary is a more considerable stream, although its origin and early course are known only by conjecture. After flowing from the south for about forty miles, through the kingdom of Loggun, it enters at the south-eastern extremity of Bornou into the great common receptacle, where it forms a noble stream, half a mile broad, and flows with considerable rapidity.

The territory of Bornou, extending along the whole western and part of the southern and northern shores of the great lake, is generally level and fertile. The climate, especially from March to the end of June, is oppressively hot, rising sometimes to 105 and 107, and even during most of the night not falling much below 100. In May the wet season commences, with violent storms of thunder and lightning. In the end of June the rivers and lakes begin to overflow, and for several months the rains are almost incessant, accompanied with damp, cloudy, and sultry weather. The inhabitants at this season are severely afflicted with fever and ague, which carry off great numbers of them. In October the rains abate; cool, fresh winds blow from the west and north-west; and for several months the climate is both healthful and agreeable.

No mention is found of Bornou among the geographers of antiquity, although it may be conjectured that the great lake of Nigritia, placed by Ptolemy in the centre of Africa, was perhaps the Tchad. Edrisi, however, in the twelfth century, describes this country under the appellation of Kuku, which is still borne by its capital. He represents the king as absolute and powerful, with a numerous army and many attendants; the people as martial, though rude; and the merchants as carrying on an active trade and possessing great wealth. Leo, who visited it about two centuries after, gives a description nearly similar. The people are represented as Pagans, and extremely rude, though numerous, and the country well cultivated. The merchants from Barbary supplied the king in his expeditions with arms and horses, while he made an annual expedition to procure slaves to be given in payment.

No further relations respecting Bornou were communicated to Europe during a very long period; yet it is remarkable that, in the maps of Sanson, Delisle, and others of the sixteenth and seventeenth centuries, there is found a lake of Bornou, and in some of them a large lake with the name of Guardia, which does not sound very dissimilar to that of Tchad. It is difficult to conjecture the ground upon which these features were delineated; yet their coincidence with those recently discovered seems to show that they were founded upon some information with which we

are now unacquainted. D'Anville, however, proceeding upon his rigid principle of admitting no object for which he could not find a positive authority, expunged these names from his map, and has been generally followed by modern geographers.

When the African Association in 1788 commenced their operations, they early received some information, collected by Mr Lucas at Tripoli, with other particulars related by Ben Ali, a Moorish merchant resident in London. From these sources were derived pretty copious notices, both concerning Bornou and Cassina; the former being described as what it then appears to have been, decidedly the ruling power in the interior of Eastern Africa, all the kingdoms of which it had reduced into a state of vassalage. In arranging these accounts, however, a considerable error was committed as to the position of this country. Mr Lucas had been informed that it was fifty journeys, or about six hundred and fifty miles, south from Fezzan; but his informant added that it was only twenty-five journeys west from the Nile. To meet this statement Major Rennell conceived it necessary to extend the route, not due south as it really was, but south-east, so as to place it in the heart of the desert, seven degrees north and eight degrees east of its real position. Kuku, likewise believed, from the statement of Edrisi, to be a separate kingdom, was placed in the same quarter, still nearer to the Nile; and thus the desert tract to the west of Nubia was filled with countries which, in that quarter, have no existence.

The expedition sent out by the British government in 1822, under Denham and Clapperton, completely adjusted the geography of this part of the continent. It was discovered that Bornou, instead of being so far removed, as our maps represented, from Houssa and Cassina, was close on their eastern frontier, and formed a continuation of that extensive, fruitful, and finely watered plain, which extends from the mouth of the Senegal across Central Africa. Its relative political circumstances had also undergone, during this interval, a very complete change. Instead of holding all the surrounding states in vassalage, it had been itself completely subjected to the dominion of the Fellatahs, who, after subjugating all Houssa, had invaded Bornou, and committed the most dreadful ravages, destroying its capital and other large cities, and bringing the whole country into a state of entire bondage. There was still, however, among the people a strong spirit of valour and independence. A mere private individual, in the northern province of Kanem, pretending to, and perhaps himself trusting in, a celestial mission, hoisted the green flag of the Prophet, and, under the title of the servant of God, undertook a series of struggles for the deliverance of his country. The Fellatahs appear to have been taken very much by surprise, and, being defeated in successive encounters, were in ten months driven completely out of Bornou. They seem to have now given up all attempts at reconquering it, although a hostile spirit still reigns between the two countries.

The conqueror, called, from his native province, El Kanemy, having the army wholly devoted to him, might probably have with little difficulty assumed the sovereign power. More moderate, and perhaps more prudent, he drew forth the nearest heir of the ancient sultans, and invested him with all the appearance and pomp of sovereignty; reserving only for himself, under the title of scheik, all its reality. The court of the sultan was established at New Bornou, which was made the capital, instead of the old city, which had been entirely destroyed during the Fellatah invasion; while the scheik, in military state, resides at the city of Kuku or Kouka.

The Bornouese throne in former times had been elective, at least among the members of the same family; and

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the nobles possessed this and other high privileges: but at present the scheik possesses a power nearly absolute, which he exercises with salutary vigour. Bands of robbers who desolated the country have been nearly extirpated, and travelling and property rendered secure, at least in the interior. Justice within each city is administered, as in other Mussulman countries, by the *cadi*, with an appeal to the scheik. Murder is punished, on conviction, by delivering the offender to the relatives of the deceased, who dispatch him with clubs. A young thief is buried in the ground up to the head, which being covered with butter and honey, is exposed under the burning sun to the attack of innumerable flies and mosquitoes. Insolvent debtors are rather hardly dealt with. But the scheik's zeal was peculiarly directed against moral offences, of which conscience and public opinion have been generally considered as the most appropriate guardians. Such were the non-observance of the Mahommedan fasts, upon which severe and relentless penalties were levied. He was also most strict in punishing those failings in the female sex which are elsewhere considered as sufficiently visited by disgrace and exclusion from society. Here not only the most ignominious punishments, but often death itself, awaited them. On one occasion sixty of these unfortunate offenders were brought before him, of whom five were hanged, and four whipt so severely that two afterwards expired; an outrageous virtue, which seems with reason to have been branded as almost diabolical. The most frivolous female offences, as talking too loud, and walking in the street with the face unveiled, were considered as ground of public indictment at this severe bar. Even the spending in courtship or otherwise a larger sum than a man was supposed to be able to afford, gave ground for dragging him before the national tribunal. Major Denham saw one thrown into prison for presenting to his bride two robes or *turkadoes*, when his station was considered as not authorizing more than one; although he proved that the lady had refused her consent on any other terms; which, however, drew upon her also a severe animadversion.

The sultan of Bornou is surrounded by a mounted body-guard, who likewise compose his principal nobles and chiefs. Their attire and equipment is the most grotesque and unwieldy, perhaps, to which fashion in any country has given rise. It is indispensable to the chief of rank that he should possess a huge belly, the singular importance attached to which is probably founded on the idea of its being an indication of plenty and luxury; and it is held so essential, that even when high feeding cannot produce the effect, stuffing is employed to give the appearance of it. Again, even in this burning climate, the body is enveloped in successive robes, amounting often to ten or twelve, the number being always considered as indicating the rank of the wearer. The head likewise is inclosed in numerous successive turbans, which are supposed to be rendered more ornamental by leaving only one side of the face uncovered. The sultan studies to be still more protuberant and more loaded with clothing than any of his courtiers. Yet in this attire he and they advance together into the field; but of course they can have no real efficiency in the duties of active warfare. The last sultan had fallen in consequence of the impossibility, caused by his ponderous equipment, of flying with sufficient speed before a victorious enemy.

The military force of Bornou consists almost entirely in cavalry, amounting to about 30,000, who are mounted on small but active steeds, which, as well as their riders, being cased in iron mail, present a very formidable appearance. They also manage their horses with the utmost skill, and perform all the manœuvres of the field most

rapidly and dexterously. Their only defect is, that when placed in the field against an enemy at all formidable, they can by no impulse be induced to fight. They look on as spectators till the contest issues in victory, when they engage eagerly in pursuit and plunder, in both of which they excel; whilst, in case of defeat, they take to flight with the utmost rapidity. As, however, the cavalry of the armies with which they contend are nearly on a level in point of prowess with themselves, the match is tolerably equal. There are usually on each side about a hundred chiefs, raised to distinction by bodily strength and prowess, who engage in single combats, and display often the most desperate valour. Barca Gana, the scheik's general, had obtained the reputation of possessing charms that rendered him invulnerable. The main dependence of that prince is upon a body of 9000 spearmen from his native territory of Kanem, who rally round him with the most enthusiastic attachment. Though almost naked, and equipped only with shield and spear, they display a discipline beyond that of almost any other African army. They march by tribes, and keep in front of their line a regular chain of piquets, with sentinels, who every half hour pass the war-cry along it; precautions very rarely employed in barbarian armies. All the sovereigns of Central Africa likewise consider themselves fortunate if they can engage the services of even a small party of Arab caravan followers, who, being brave and armed with muskets, an instrument yet almost unknown in this region, are objects of something like supernatural dread.

The territory of Bornou is fertile and well watered, yielding large crops even under very imperfect cultivation. The labour is chiefly performed by female slaves, who, at the commencement of the rainy season, scratch rather than turn the ground, and scatter rather than sow the seed. They are also obliged to watch the growth, in order to guard against numerous animal depredators; a very perilous occupation, in the course of which they are liable to be carried off by the wild beasts, who are roaming about in every direction. The rice and wheat are inferior, and grown in small quantity. The grain which forms the staple food of the people is a species of millet called *gussub*, which they form, not into bread, an article here entirely unknown, but into a species of paste, that, by the addition of butter and honey, forms the highest boast of Bornou cookery. Cotton and indigo are also valuable productions, affording the material for the cloths finely dyed with blue stripes, which form the staple fabric of the country. All the domestic animals are reared, and very numerous herds of oxen are possessed, chiefly by an Arab tribe called *Shouaas*. Major Denham reckons 20,000 on the shores of the Tchad, and double that number on the banks of the Shary. The empire, however, is remarkably destitute of the products of horticulture. There is neither a fruit nor a vegetable, except some onions in the vicinity of the large towns, and a very few limes and figs reared with great difficulty in the garden of the scheik.

The wild animals are very numerous, finding both food and cover in the extensive woody and marshy districts. Lions prowl about in considerable numbers, approaching even the walls of the towns. The Bornouese delight in taming and even making a pet of this noble animal. The scheik, as a special favour, sent Major Denham a present of a young lion, which he very prudently returned, lamenting the want of space for his accommodation. Elephants, in herds of fifty to four hundred, wander over the tract inundated by the Tchad, and are hunted and killed both for the flesh and the ivory. Hyenas also, in huge and formidable bands, invade the cultivated fields, and are with difficulty prevented from penetrating

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Bornou. into the towns. The tall form of the giraffe is not unfrequently seen cropping the leaves of the dense forest. The waters abound with crocodiles and hippopotami, and the flesh of both is valued for food; that of the former, indeed, is described by naturalists as extremely delicate. The country is filled with swarms of bees, which often obstruct the passage of the traveller; and the honey, though only partially collected, forms one of the chief Bornouese delicacies. Antelopes, gazelles, ostriches, and various other quadrupeds and feathered animals, are pursued as game.

The population of Bornou is calculated by Major Denham at 5,000,000; but, considering its limited extent, and the imperfect state of agriculture, this number must, we think, be considerably exaggerated. The leading people, called Bornouese or Kanowry, present a complete specimen of the negro form and features; having large mouths, thick lips, broad noses, an unmeaning face, but good teeth and high foreheads. The females heighten their want of beauty by a most extensive and injudicious system of puncturing and tattooing. The people are peaceably disposed, friendly and courteous in their manners, and distinguished by a sort of good-natured heaviness. Though endowed with a slender degree of courage, they are resentful, and addicted to petty larcenies. The law allows of polygamy, but the richest have seldom more than two or three wives, and the rest of the community only one. The favourite amusement is wrestling, not performed in person, but viewed as a spectacle while performed by slaves taken in war from the neighbouring nations, particularly the Beghermes and Musgows. The displays of strength made by these men are said to be often very extraordinary. A powerful wrestler sells at a high price, and the masters place extraordinary pride in the performance of their slaves, cheering them during the combat, and, on its successful issue, often presenting them with valuable robes. Even the ladies of Bornou engage occasionally in public contests, where they often throw each other with violence to the ground. Another favourite amusement consists in a rude game bearing some resemblance to chess, played with beans and holes in the sand.

The Mahomedan religion is universally professed in Bornou, and even with violence and bigotry. Through recommendations brought with them, the English travellers secured good treatment; but, as unbelievers, they were viewed with the deepest horror, and almost as a species of monsters. Even from those who showed at first the most friendly disposition, the disclosure of their creed drew forth deep groans, sometimes screams, and usually arrested all progress to intimacy. A man who had served them for two or three weeks, although he pleaded that it was only under the most extreme necessity, was declared unfit on that ground to be received as a witness in a court of law. There are resident in Bornou a considerable number of *fighis* (writers or doctors), who have visited Mecca, and are well skilled in Arabic. It is even an employment to write copies of the Koran, which are sent into Barbary, where they bear a considerable price. Its verses are much used as charms or amulets, in the preparation of which the scheik was understood greatly to excel, gaining almost as many victories by his pen as by his sword. The Bornouese, like other negroes, have songs relating to love or war, some of which are said to possess merit; but their intellectual character in general seems to rank extremely low.

The pastoral districts of this country are occupied by a tribe called Shouaas, who are accounted Arabs, and speak that language, though they have scarcely any resemblance to those in the north bearing that appellation. They have fine open countenances, with aquiline noses, large eyes,

and a complexion of light copper; and they exhibit a strong though improved resemblance to the European gipsies. Their deportment, however, is not very favourably spoken of. They do not want courage, and can furnish the government when necessary with 15,000 horse; but they are arrogant and deceitful, imposing upon the people by the manufacture of charms, and by pretensions to prophecy and fortune-telling. Having thus gained admission into the houses, they not only sell these gifts at a high rate, but embrace opportunities of pilfering. Probably they were observed to disadvantage in the heart of the cities. One of their tribes, called Dugganahs, who were visited in their native tents on the Shary, presented a most pleasing picture of patriarchal simplicity. Their countenances were noble and expressive, and the attachments of kindred and domestic affection were displayed in peculiar force. Another tribe, called the La Salas, almost independent of Bornou, inhabit a number of low islands in the Tchad, covered with rich pasture, and separated from the continent by channels so shallow as to be fordable on horseback. A knowledge of the tracts is however requisite; and those troops who without it attempted to penetrate through them have got entangled in mud, sunk into deep pools, and signally defeated.

The towns in Bornou are of considerable size, surrounded with walls thirty-five or forty feet in height, and twenty feet in thickness, having at each of the four corners a triple gate, composed of strong planks of wood, with bars of iron. The abodes of the principal inhabitants form an inclosed square, in which are separate houses for each of the wives; whilst the chief himself resides in two or more elevated structures resembling turrets, connected together by terraces. These are well built, of a reddish clay, highly polished, so as to resemble stucco; whilst the interior roof, though composed only of branches, is tastefully constructed. The horns of the antelope and gazelle are employed to fasten together the different parts, and have suspended from them the quiver, spear, and shield of the owner. The ordinary houses are small, being built partly of mud and thatched, partly only of straw or coarse grass mats. Major Denham was accommodated in one of eight feet diameter, having a hole two and a half feet high, by which he crept in and out; but this deficiency of aperture was rendered almost necessary by the crowds of tormenting insects who would otherwise have made good their entrance. Though New Bornou and Kouka were the residences, the one of the sultan and the other of the scheik, neither is equal in magnitude to Angornou, estimated to contain 30,000 inhabitants, who, on market days, are swelled to 80,000 or 100,000. On the Yeou are seen the ruins of Old Bornou and Gambarou, which appear to have been greater and better built cities than any now in the kingdom; but they had been so entirely destroyed by the Fellatahs in their late invasion, that the very site is in a great measure covered with shrubs and vegetation. The vicinity is almost laid waste by the inroads of the Tuaricks; and, indeed, all the kingdoms of Central Africa suffer the disadvantage of having their frontier exposed to the ravages of predatory tribes who occupy the rude and desert borders.

The English travellers have held out favourable hopes of the commerce which might be opened with Bornou. They observed the increased and increasing demand, among a numerous population, for goods which Britain either does or could produce cheaper than any other country; and these goods were found selling at an advance of 300 per cent. above their price at Tripoli. On the other hand, it must not be forgotten that the route from that city, though the nearest of any from the coast, greatly exceeds a thousand miles, through the most dreary and desolate tracts, amid the domains of numerous predatory tribes.

Borodino
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Borough.

The merchant has to encounter, therefore, not only accumulated hardships, but all the perils of famine, battle, and pestilence. It would be vain, therefore, to expect that any one would conduct such a trade without very high profits. It is at present carried on by merchants, or rather chiefs, each with a large body of armed followers, alike prepared for commerce or war. The European who should engage in such a trade would be obliged to follow this example, and might expect to encounter their enmity and rivalry. It seems doubtful, therefore, how far such a trade could now be carried on by any other than its present channel.

Amongst the commodities which find a market in Bornou are mentioned writing paper, beads, coral, silks and cottons of gaudy patterns, turbans, small carpets, brushes, caftans, and shirts ready made; brass basons tinned, small mirrors, pistols, and other arms ornamented, but cheap. The commodities taken in return are almost exclusively slaves, obtained by purchase or capture; and we fear it will be more difficult than Major Denham supposes to divert the trade from this bad channel. Neither gold nor silver are seemingly to be procured in Bornou. Elephants' teeth, ostrich feathers, raw hides, musk, indigo, and senna, are mentioned as commodities suited to the market of Europe.

(E.)

BORODINO, a village in Russia, near the river Moskwa, about ninety miles west of Moscow, remarkable for the terrible battle fought there on the 7th of September 1812, between the French and Russians, in which the latter were defeated.

BOROMÆUS. See BORROMEUS.

BOROUGH, BURROUGH, *Borow*, or *Burgh*, is a term frequently used for a town or corporation which is not a city.

BOROUGH, in the original Saxon *borge* or *borgh*, is by some supposed to have primarily meant a tithing or company consisting of ten families, who were bound and combined together as sureties for one another. Afterwards, as Verstegan informs us, borough came to signify a town that had something of a wall or inclosure about it; so that all places which amongst our ancestors had the denomination of borough, were one way or other fenced or fortified, being, as it were, *πυργιοι*. But in latter times this appellation was also bestowed on several of the *villæ insigniores*, or country towns of more than ordinary note, though not walled.

The ancient Saxons, according to Spelman, gave the name of burghs to what in other countries were called cities. But different canons being made for removing the episcopal sees from villages and small towns to the chief cities, the term *city* came to be attributed to episcopal towns, whilst that of borough included all the rest, even although they had the appearance of cities, as being governed by mayors, having bye-laws of their own making, sending representatives to parliament, and being fortified with a wall and castle, and the like.

Royal *BOROUGHs* or *Burghs*, in Scotland, are corporations originally created for the advantage of trade, in virtue of charters granted by several of their kings, and having the privilege of sending commissioners to represent them in parliament, besides other peculiar privileges. The royal burghs are not only so many distinct corporations, but also constitute one entire body, governed by, and accountable to, a general court, anciently called *the court of four boroughs*, which was held yearly, to treat and determine concerning matters relating to the common interest. The four burghs which composed this court were, Edinburgh, Stirling, Roxburgh, and Berwick; but the two last falling into the hands of the English, Linlithgow and Lanark were substituted in their room, with a saving to the former

whenever they should return to their allegiance. But this court not being sufficient to answer the necessities of the royal burghs, they were all empowered under James III., in 1487, to send commissioners to a yearly convention of their own, which was then appointed to be held at Inverkeithing, but is now held at Edinburgh, under the denomination of the Convention of Royal Burghs, which was vested with great powers, and had for its object the benefit of trade, and the interest of the burghs generally.

Borough-English, a customary descent of lands or tenements, in some ancient boroughs and copyhold manors, by which the youngest son, and not the eldest, succeeded to the burgage tenement on the death of his father.

BOROUGHBRIDGE, a borough and market-town in the parish of Aldborough and west-riding of Yorkshire, 208 miles from London, on the river Eyne, which is navigable to this place. The market is held on a Saturday. The number of inhabitants in 1801 amounted to 680, in 1811 to 745, and in 1821 to 860.

BOROWITSCHI, a circle of the Russian government of Novogorod, extending over 18,796 square miles, containing one city and fifty-four parishes, with 91,720 inhabitants. The chief place is a city of the same name, on the river Msta, containing two churches, 860 houses, and 3500 inhabitants, amongst whom are many pilots employed in interior navigation. Long. 33. 5. E. Lat. 58. 16. N.

BOROWSK, a circle in the Russian government of Kaluga, 614 square miles in extent, with 78,400 inhabitants. The chief place is the city of the same name on the river Protwa, a manufacturing place for linen goods, with a population of about 7000 persons. Long. 36. 5. E. Lat. 55. 14. N.

BORRELISTS, in *Ecclesiastical History*, a Christian sect in Holland, so denominated from their founder Borrel, a person of much learning in the Hebrew, Greek, and Latin tongues. They rejected the use of the sacraments, public prayer, and other external acts of worship; affirming that all the Christian churches of the world have degenerated from the pure apostolical doctrines, because they have suffered the word of God, which is infallible, to be expounded, or rather corrupted, by doctors, who are not infallible.

BORRICHIOUS, OLAUS, one of the most learned men of his age, the son of a Lutheran minister, was born in 1626, at Borchén in Denmark. He was sent to study physic in the university of Copenhagen in 1644, and he began to practise during a terrible plague which made great havoc in that city. In 1660, although appointed professor of botany and chemistry, he visited Holland, England, and France; was received as doctor at Angers; and visited Rome in 1665. In the course of his travels he attended the most celebrated schools, and was selected by Queen Christina as her master in chemistry. He returned to Copenhagen in 1666, and discharged the duties of his office with great assiduity, as his works abundantly testify. He was raised to the office of member of the supreme council of justice in 1686, and to that of counsellor of the royal chancery in 1689; and he died of the operation of lithotomy in 1690. The following is a list of his works: 1. *Dokimasia Metallica*, Copenhagen, 1660, 8vo; 2. *De Ortu et Progressu Chemicæ Dissertatio*, ibid. 1668, 4to; 3. *Hermetis, Ægyptiorum, et Chemicorum Sapientia*, ibid. 1674, 4to; 4. *Lingua Pharmacopœorum*, ibid. 1670, 4to; 5. *Cogitationes de variis Linguae Latine Ætatis*, ibid. 1675, 8vo; 6. *De Causis diversitatis Linguarum*, ibid. 1675, 4to; 7. *De Somno et Somniferis*, Francfort, 1680, 1683, 4to; 8. *De Usu Plantarum Indigenarum in Medicina*, Copenhagen, 1688, 1690, 8vo; 9. *Dissertationes V. de Poetis Græcis et Latinis*, ibid. 1676; 10. *Conspectus Chemicorum Scriptorum Illustriorum*, ibid. 1696, 4to; 11. *De An-*

Borough-
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Borrichius.

Borromean Islands. *tiqua Urbis Romæ Facie*, ibid. 1697, 8vo; 12. *De Urbis Romæ Primordiis*, ibid. 1687, 4to; with some trifles not worth particularizing.

BORROMEAN ISLANDS. Not far from the south-eastern termination of the Alps there is a lake called Lago di Locarno, or Lago Maggiore, extending above fifty miles in length by five or six in breadth. It contains several islands, amongst which are the Isola Bella and Isola Madre, situated in a large bay towards the west, and designed the Borromean Islands. Towards Switzerland the lake terminates in a canal, which is of much utility for commercial purposes; and near Cesti, which is ten leagues from the city of Milan, it discharges itself into the river Ticino, with a current rapid and dangerous to the navigation of small vessels. The Borromean Islands lie about fifteen miles distant by water from Cesti, and the passage to them displays a succession of curious and interesting objects, some of which are connected with their own history. Amongst these may be mentioned a colossal bronze statue of San Carlo Borromeo, above the small town and port of Arona, which is sixty feet in height, and stands on a pedestal of proportional dimensions. This gigantic image was cast at Milan, and brought hither in pieces. The Borromean Islands are of inconsiderable size, but the artificial decoration they have received has been the admiration of spectators since the middle of the seventeenth century, when both were barren and unprofitable rocks. About this time Vitaliano, Count Borromeo, a nobleman of illustrious descent, and master-general of the ordnance to the king of Spain, resolving on their embellishment, directed that they should be covered with earth from the neighbouring banks of the lake. His injunctions were fulfilled, and, at an immense expense, the islands were converted into two gardens. Isola Madre appears in ten successive terraces, rising one hundred and thirty feet above the level of the water, each regularly decreasing in size from the base to the summit, which is an oblong surface, seventy feet by forty in extent, paved and surrounded by a balustrade. The whole are environed by gigantic marble statues of gods, goddesses, and horses, or other figures; and the walls are clothed with the finest fruit trees and evergreens, many of which belong to the southern climates. There is, besides, a magnificent palace towards the western end of the island, close to the lake, which almost washes its walls. It is built on arches, which are formed into grottoes, with a floor of Mosaic, representing various objects, and decorated also with shell-work and marble. The palace itself contains a profusion of marbles and paintings; and some flower-pieces, executed on marble, have been particularly admired, as also busts and statues. At the angles of the garden, which has a southern exposure, there are two round towers with lofty chambers adorned with red and white marble; and in the vicinity are groves of laurels, orange-trees, lofty cypresses, and other odoriferous plants, rendering it a delightful retreat. But much of the embellishment is lost by the immediate neighbourhood of a miserable hamlet.

Isola Madre, which is the larger of the islands, is between one and two miles from Isola Bella; it consists of a superstructure of seven terraces, apparently lower, but not less beautiful, than the other. However, it is of equal height in reality, the base being a perpendicular rock, rising considerably out of the water, and on that account not requiring so much covering. Here also there is a palace embellished with paintings and different ornaments; and in the gardens are groves of citrons, cedar, and orange-trees, besides a summer-house close to the lake. But all the decorations, as before, are necessarily on a limited scale, from the size of the island; and it excites the wonder of the spectator, that in a space thus restricted so

much has been done. Pheasants were formerly bred in this island, as they were deterred by the vicinity of the water on all hands from attempting to escape. There were some hydraulic exhibitions in Isola Bella, and large cisterns or reservoirs to preserve them in action. When any foreign prince visited these islands in the night, or resided upon them, they were illuminated with various coloured lights. Their decorations were not only completed at an enormous expense, but to keep them in the same state since 1671, about which time they seem to have been finished, the charge has proved equally great. They are frequently called the "Enchanted Islands." Keyser, a learned traveller, says, "these two islands can be compared to nothing more properly than two pyramids of sweetmeats, ornamented with green festoons and flowers." And a later tourist, Coxe, who borrows largely from him, in speaking of the Isola Bella, observes, "if any thing justly gives this island the appellation of enchanted, it is the prospect from the terrace. The gradual diminution of the mountains, from the regions of eternal snow to the rich plain; the sinuosity of the lake; its varied banks; the bay of Marozzo, bounded by vast hills; the neighbouring borough of Palanza, and more distant view of Laveno, the numerous villages, the Isola Madre, and another island sprinkled with fishermen's huts, form a delightful assemblage."

These islands, after passing from the family of Borromeo, appear to have come into possession of the emperor of Germany. More recently, both of them, together with the western coast of the bailliage of Locarno, are said to have been ceded by the empress Maria Theresa to the king of Sardinia, in consideration of the assistance she had derived from him. The whole lake is environed by hills, covered with vineyards, and interspersed with summer-houses; beautiful rows of trees traverse its banks, and the scene is still further embellished by cascades falling from the mountains.

BORROMEUS, ST CHARLES, cardinal, and archbishop of Milan, was the son of Gilbert Borromeo, count of Arona, and of Mary of Medicis, and was born at the castle of Arona, upon the Lago Maggiore, in the Milanese, on the 2d October 1538. When he was about twelve years old, Julius Cæsar Borromeus resigned to him an abbacy, which was considered as an hereditary appurtenance of the family; and Charles accepted the benefice, but applied the revenue wholly in charity to the poor. Having acquired a sufficient knowledge of the languages at Milan, he studied the civil and canon law at Pavia; and derived great advantage from the company and conversation of Francis Alciat, one of the most learned men of the age. In the year 1554 his father died, an event which recalled him to his native place, Arona, where, although he had an elder brother, Count Frederick, he was requested by the family to take the management of their domestic affairs, which he at length consented to do.

After a time however he resumed his studies, and, in the year 1559, being then just twenty-one, he took his doctor's degree. The promotion of his uncle Cardinal de' Medicis to the pontificate, by the name of Pius IV. which happened the year following, seemed to have little effect upon him; but he was soon made prothonotary, intrusted with both the public and privy seal of the ecclesiastical state, and created cardinal deacon, and soon after archbishop of Milan. In compliance with the wish of his uncle the pope, he lived in great splendour, having a brilliant retinue and a large number of domestics; yet his own temperance and humility were never brought into question. In order to render even his amusements useful, he established an academy of select and learned persons, each of whom was to write on some chosen subject,

Borromeus.

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either in verse or in prose, and to communicate to the others in frequent conferences the fruits of his studies. The works produced by this society have been published in several volumes, under the title of *Noctes Vaticanae*, printed at Venice in 1748, because these useful assemblies were held at the Vatican, in the evenings, after the business of the day had been concluded. About this time he also formed a design of founding a college at Pavia, and in prosecution of this design raised a large edifice upon the foundations of several houses which belonged to the Borromeo family in that city. He also obtained from the pope several benefices, which he attached to his establishment; he provided it, out of his own private income, with every thing necessary for the young scholars; and he dedicated the college thus founded to Justina, virgin and martyr.

Upon the death of his elder brother Frederick, his relations, friends, and even the pope himself, advised him to change his state, quit the church, and marry, that his family might not become extinct. Contrary to this advice and the expectations of the world, however, Charles addressed the pope in these terms: "Do not complain of me, holy father, for I have taken a spouse whom I love, and on whom my wishes have long been fixed." From this time he became more fervent in the exercises of piety, and more zealous for the advancement of ecclesiastical knowledge.

A very intimate friendship subsisted between Borromeus and Don Barthélemy des Martyrs, archbishop of Prague, and author of a book entitled *Stimulus Pastorum*. This work falling into the hands of Borromeus, inspired him with an earnest desire to become a preacher, more especially as he was now convinced that predication was one of the principal duties of a prelate. Multiplicity of business, ill health, a feeble voice, and a difficult pronunciation, formed no inconsiderable obstacles to the success of his design, yet he at length surmounted them all; and although his beginnings were weak, perseverance enabled him ultimately to attain the object of his ambition. Meanwhile a change in the state of his relations with the holy see was at hand.

Pius IV. died on the 7th of January 1566, and twenty-eight days thereafter Cardinal Alexandrine mounted the papal throne under the title of Pius V., the skill and diligence of Borromeus having very materially contributed to stifle the cabals of the conclave. As soon as this event took place, and tranquillity had been re-established at Rome, which was generally disturbed by such elections, Borromeus gave himself wholly up to the reformation of his diocese of Milan, where the most flagitious irregularities were openly practised, and where, from the ignorance of the secular clergy, the insubordination of the regulars, the superstitious practices introduced into public worship, the scandalous negligence exhibited in the administration of the sacraments, and the gross abuse of all the functions of the holy ministry, matters had fallen into a most deplorable state. The archbishop began by making pastoral visits in his metropolis, where the canons were by no means distinguished for the purity of their manners. By a variety of wise and necessary regulations, he soon restored proper decency and dignity to divine service. In conformity to the decrees of the council of Trent, he cleared the cathedral of the gorgeous tombs, rich ornaments, banners, arms, and in general of all the trophies with which the vanity of man had disfigured the house of God; and in order to give a sanction to his reform by a decisive example, he spared not the monuments of his nearest relations. Nor did his zeal stop here. He divided the nave of the church throughout its whole length into two compartments, so that the sexes, being separat-

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ed, might perform their devotions without any attention to each other, and with feelings and impressions suitable to the place. From the cathedral he proceeded next to the collegiate churches, and even to the fraternities of penitents, particularly that of St John the Baptist. The duty of this society was to attend criminals to the place of punishment, and to assist, comfort, and prepare them for death; but the spirit of the institution had been forgotten, and the wretches condemned to death were dragged to execution like beasts, without spiritual assistance or consolation. The archbishop revived the original fervour of the order, and persuaded many of the nobility and principal persons of the city to become members of a society appropriated to so eminent a branch of Christian charity. The reformation of the monasteries followed that of the churches; and the vigilance of the archbishop soon extended itself from the city to the country round it, which abounded with irregularities requiring correction. The great abuses which had overrun the church at this time arose principally from the ignorance of the clergy. In order, therefore, to attack the evil at its root, Charles established seminaries, colleges, and communities, for the education of young persons intended for holy orders. He met with many difficulties and much opposition in his endeavours to bring about a reformation of manners; but by an inflexible constancy, tempered with great sweetness of manners, he prevailed against every obstacle, and succeeded in rendering the most important services to the cause of morals as well as religion.

But the governor of the province, and many of the senators, were apprehensive that the cardinal's ordinances and proceedings would encroach upon the civil jurisdiction, and become inconsistent with the rights of his Catholic Majesty, to whom the duchy of Milan then belonged. And this proved a fruitful source of remonstrances, representations, and complaints, addressed to the courts of Rome and Madrid; these, however, in as far as concerned the king of Spain, Philip II. were referred entirely to the decision of the pope. But Borromeus had more formidable difficulties to struggle with, in the inveterate opposition of several religious orders, particularly that of the Brothers of Humility. Three provosts of the society entered into a conspiracy to cut him off; and one of their confederates, Jerome Donat, surnamed *Farina*, took upon him to carry the design into execution. For this purpose he mixed with the crowd which repaired to the archiepiscopal chapel, where the cardinal spent an hour every evening in prayer with his domestics and other pious persons; and having watched his opportunity, he fired at his eminence a harquebuss, loaded with a ball suited to the calibre of the piece, and with a considerable charge of leaden shot besides. It is said that the ball struck him on the spine, but dropped at his feet without doing any other damage than ruffling his rochet, and that one of the shot penetrated his clothes to the skin, and there stopped, without imprinting any wound; which was considered a miracle, especially as another shot tore away part of a wall, and went quite through a table. Without having recourse to such a solution, his escape is certainly wonderful, considering that the assassin had taken his station at the distance of only five or six paces from his intended victim. At the moment when the shot was fired the choir were chanting the fine old melody, *Non turbetur cor vestrum neque formidet*; and it is said, that after the discharge of the piece the cardinal archbishop continued the service without any apparent emotion. The assassin and three of his accomplices were seized, tried, condemned, and executed, notwithstanding every effort of the cardinal to screen them from the punishment which they so well merited.

Borrows-
tounness.

In the year 1576 the city and diocese of Milan were visited by the plague, which swept away great numbers. On this occasion the behaviour of Borromæus was truly Christian and heroic. He not only continued on the spot, but went about giving directions for accommodating the sick and burying the dead, with a zeal and attention that were at once ardent and deliberate, minute and comprehensive; and his example stimulated others to join in the good work. He avoided no danger, and he spared no expense; nor did he content himself with establishing proper regulations in the city, but went out into all the neighbouring parishes where the contagion raged, distributing money to the poor, ordering proper accommodations for the sick, and punishing those, especially the clergy, who were remiss in discharging the duties of their calling. But notwithstanding the fatigue and perplexity which he suffered in thus executing his pastoral charge, he abated nothing of the usual austerity of his life, nor omitted any of his stated devotions; whatever approached to luxury or magnificence he considered as incompatible with the propriety of his character; bread and water constituted his humble and daily fare.

But continual labours and austerities at last shortened the life of this remarkable man. Having gone to Verceil to put an end, if possible, to divisions which threatened the most fatal consequences, he there received a message from the duke of Savoy, requesting his presence at Turin, whither he immediately repaired. From Turin he retired to a place called the Sepulchre, on the mountain Vairais, where being seized with an intermittent fever, he returned to Milan, and died there on the 4th of November 1584, the day after his return. Borromæus was canonized on the 1st of November 1610, in the pontificate of Leo XI. Besides the *Noctes Vaticanæ*, to which he appears to have contributed, the only literary relics of this intrepid and zealous reformer are some homilies, discourses, and sermons, with a collection of letters. Several lives of him have been published. That by Godeau, however, is too succinct; that by Touron, a Dominican, is too diffuse; and that by Ribadeneira, a Spanish Jesuit, is filled with incredible and ridiculous fables. But through all the mist of absurdity and superstition in which the character and actions of Borromæus have been involved, it is easy to discern, that if the Church of Rome had had many such men, religion might have been spared some grievous wounds, and the nations of Europe many afflicting and sanguinary convulsions.

BORROWSTOUNNESS (generally abbreviated to Bo'ness), a sea-port town of Scotland, in the county of Linlithgow, is situated on the southern shore of the Frith of Forth, where that arm of the sea is between three and four miles broad. This is one of the most ancient sea-port towns of Scotland, and many of the houses appear to be of very ancient date. The town is irregularly built; the streets are narrow and incommodious; and, from the number of public works, whence smoke is profusely emitted, the houses are for the most part coated with soot. There is an excellent harbour here, where a patent slip is erected for the use of shipping. The trade of this port was at one time considerable; but of late years it has much declined, in consequence of the navigable canal between the rivers Forth and Clyde having gradually transferred the trade to Grangemouth, which stands at the junction of this canal with the Forth. At present it possesses three vessels employed in the whale-fishery. The parish contains extensive coal-works. There are also two distilleries, a pottery, a soap-work, and a vitriol and sal-ammoniac work. Besides the established church, there is a dissenting meeting-house. There are two weekly markets, and an annual fair. The population in 1831 amounted to 2809.

Borrowstounness is distant eighteen miles west of Edinburgh, and three north of Linlithgow.

BORSEHOLDER, among the Anglo-Saxons, one of the lowest magistrates, whose authority extended only over one free burgh, tithing, or decennary, consisting of ten families. Every freeman who wished to enjoy the protection of the laws, and not to be treated as a vagabond, was under the necessity of being admitted a member of the tithing where he and his family resided; and in order to obtain this admission, it was necessary for him to maintain a good reputation, because all the members of each tithing being pledges and securities for one another, and the whole tithing sureties to the king for the good behaviour of all its members, they were very cautious in admitting any into their society who were of bad or doubtful characters. Each tithing formed a little state or commonwealth within itself, and chose one of its most respectable members for its head, who was sometimes called the *alderman* of such tithing or free burgh, on account of his age and experience, but most commonly *borseholder*, from the Saxon words *bor*, a security, and *alder*, a head or chief. This magistrate had authority to call together the members of his tithing, to preside in their meetings, and to put their sentences in execution. The members of each tithing, with their tithing-man or borseholder at their head, constituted a court of justice, in which all the little controversies arising within the tithing were determined. If any dispute of great difficulty or importance happened, or if either of the parties was not willing to submit to a sentence given in the tithing-court, the cause was referred or appealed to the next superior court, which was that of the hundred.

BORSET, or **BORSETT**, celebrated for its baths, a place about half a league from Aix-la-Chapelle in Germany. The abbey is a very magnificent structure. It was formerly a monastery, but now serves as a nunnery, the abbess of which is usually a princess of the empire, and lady of Borset. The waters are warm, and of the same nature as those of Aix-la-Chapelle; and they are only used for diseases in which those last mentioned are recommended, and also in dropsical and cedematous cases. The waters are distinguished into the upper and lower springs. The former were found by Dr Simmons to raise the thermometer to 186°, the latter to only 127°.

BORSOD, a circle in the Austrian kingdom of Hungary, the frontiers of which are washed by the rivers Samlor and Torna. It extends over 1332 square miles, or 852,480 acres, comprehends 12 towns, 167 villages, and 19,650 houses, and contains a population of 156,050 souls. Nearly half the land is covered with woods; but the remainder is moderately fertile, and produces good corn, wine, hemp, flax, and some tobacco. The manufactures are chiefly of a domestic kind.

BORYSTHENES. See **BORISTHENES**.

BOS, **JOHN BAPTIST DU**, a celebrated author and member of the French academy, was born at Beauvais in 1670, and finished his studies at the Sorbonne. In 1695 he was named one of the committee for foreign affairs under M. Torez; and he was afterwards charged with some important transactions in England, Germany, Holland, and Italy. On his return to Paris he met with rapid preference, having been made an abbé, and chosen perpetual secretary of the French academy. He was the author of several excellent works, the principal of which are, 1. *Critical Reflections upon Poetry and Painting*, 3 vols. 12mo; 2. *The History of the four Gordians*, confirmed and illustrated by medals; and 3. *A critical History of the establishment of the French Monarchy among the Gauls*, 2 vols. 4to, and 4 vols. 12mo. He died at Paris on the 23d of March 1742.

Borse-
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Bos.

Bos. See MAMMALIA, *Index*.

Bos, in *Antiquity*, was the name of an ancient Greek silver coin or *didrachmus*, equivalent to two drachms: it was sometimes also struck of gold. This coin was so called from having on it the impression of an ox. It obtained chiefly among the Athenians and Delians. Hence arose the phrase *Bos in lingua*, applied to those who had taken bribes to hold their tongue.

BOSA, a city on the western coast of the island of Sardinia, in a fine valley on the northern bank of the Terno. It is the see of a bishop, and is somewhat subject to malaria, but contains about 4000 inhabitants. Long. 8. 25. 31. E. Lat. 40. 16. 40. N.

BOSCAGE, the same with a grove or thicket.

BOSCAGE, among painters, denotes a landscape representing much wood and trees.

BOSCAN, ALMOGAVAR, JUAN, a Spanish poet of the sixteenth century, born at Barcelona about the year 1500. He was the intimate friend of Garcilasso de Vega, and with him contributed essentially to the improvement of Spanish poetry. He was the first who introduced endecasyllabic verse, and transported into the Castilian tongue the sonnets and other poetical forms consecrated by the usage of the best Italian authors. His poetry is divided into three books, the first of which contains only *redondillas*, while the two others are filled with the pieces which he composed after he adopted his new method, namely, *canciones*, sonnets, tercetts, compositions in the *ottava rima*, and some writings in blank verse. Boscan was tutor to the celebrated Ferdinand de Toledo, duke of Alba, and appears to have died before the year 1543. His works were printed in conjunction with those of his friend Garcilasso, at Medina in 1544, 4to, at Leon in 1549 in 16to, and afterwards at Venice in 1553, 12mo.

BOSCAWEN, EDWARD, a brave British admiral, was the second son of Hugh Lord Viscount Falmouth. Having early entered into the navy, he was, in 1740, captain of the *Shoreham*; and behaved with great intrepidity as a volunteer under Admiral Vernon, at the taking of Porto-Bello. At the siege of Carthage, in March 1741, he had the command of a party of seamen who resolutely attacked and took a battery of fifteen twenty-four pounders, though exposed to the fire of another fort of five guns. Lord Aubrey Beauclerk having been killed at the attack of Boca-Chica, Captain Boscawen succeeded him in the command of the *Prince Frederick* of seventy guns. In May 1742 he returned to England, and married Frances, daughter of William Glanville, Esq.; and the same year he was elected representative for Truro in Cornwall. In 1744 he was made captain of the *Dreadnought* of sixty guns; and soon after he captured the *Medea*, a French man of war commanded by M. Hoquart, the first ship taken in that war. In May 1747 he signaled himself under the admirals Anson and Warren, in an engagement with the French fleet off Cape Finisterre, and was wounded in the shoulder with a musket ball. Here M. Hoquart, who then commanded the *Diamond* of fifty-six guns, again became his prisoner; and all the French ships of war, ten in number, were taken. On the 15th of July he was made rear-admiral of the blue, and commander-in-chief of the sea and land forces employed on an expedition to the East Indies; and on the 4th of November he sailed from St Helen's, with six ships of the line, five frigates, and 2000 soldiers. On the 29th of July 1748 he arrived at St David's, and soon after laid siege to Pondicherry; but the men growing sickly, and the monsoons being expected, the siege was raised, and Mr Boscawen showed himself as much the general as the admiral in his retreat. Soon afterwards he received news of the peace, and Madras was delivered up to him by the French. In April

1750 he arrived at St Helen's in the *Exeter*, and found that in his absence he had been appointed rear-admiral of the white. He was the next year made one of the lords commissioners of the admiralty, and chosen an elder brother of the Trinity-house. In February 1755 he was appointed vice-admiral of the blue. On the 19th of April, sailing in order to intercept a French squadron bound to North America, he fell in with the *Alcide* and *Leys* of sixty-four guns each, which were both taken. On this occasion M. Hoquart became his prisoner for the third time, and he returned to Spithead with his prizes and 1500 prisoners. In 1756 he was appointed vice-admiral of the white, and in 1758 admiral of the blue and commander-in-chief of the expedition to Cape Breton, when, in conjunction with General Amherst, and a body of troops from New England, the important fortress of Louisbourg and the whole island of Cape Breton were taken; services for which he afterwards received the thanks of the House of Commons. In 1759, being appointed to command in the Mediterranean, he arrived at Gibraltar, where hearing that the Toulon fleet, under M. de la Clue, had passed the Straits in order to join that at Brest, he got under sail, and on the 18th of August saw, pursued, and engaged the enemy. His ship, the *Namur* of ninety guns, losing her main-mast, he shifted his flag to the *Newark*; and, after a sharp engagement, took three large ships and burnt two, in Lagos Bay, after which he returned to Spithead with his prizes and 2000 prisoners. On the 8th December 1760 he was appointed general of the marines with a salary of L.3000 per annum, and was also sworn a member of the privy council. He died in 1761.

BOSCOI, or Bosci, in *Ecclesiastical History*, denotes a class or tribe of monks in Palestine, who fed on grass like the beasts of the field. The word is Greek, *βοσχοι*, *graziers*, formed from *βοσκη*, *pasco*. The Boscoi are ranked amongst the number of Adamites, not so much on account of their habit as their food. They took no care about provision; but when eating time came, they went into the fields, each with his knife in his hand, and gathered and ate what they could find.

BOSCOVICH, ROGER JOSEPH, was born on the 18th of May 1711, at Ragusa, a sea-port on the coast of the Adriatic, and capital of a small republic of the same name, then under the protection of the Turks and the Venetians. It does not appear that our author gave any tokens of superior genius till he was sent to learn grammar and philosophy in the schools of the Jesuits, who were at that time the principal teachers in Ragusa, and indeed throughout all Italy. Amongst these shrewd observers his docility and obedience were sufficient to mark him out as a person likely to attain future eminence, and consequently to procure him particular attention. In his fifteenth year, after he had gone through the ordinary course of education, and when it was necessary to decide as to his future pursuits, application was made for his admission into the order; and, for the reasons just mentioned, this was readily complied with, and the subject of the present notice sent to Rome in the year 1725. On his arrival in the Eternal City he entered on his novitiate for admission into the order; but here his studies changed their character and direction, although they were still pursued with diligence. Christian morality, with the rules and constitutions of the order, claimed his attention for two years; after which he was instructed in rhetoric, and became well versed in general literature, particularly Latin poetry, which at that time was very much cultivated.

From the novitiate he was sent to the Roman college to study mathematics and physics; and it was in these sciences that his genius and abilities shone forth so conspicuously, and procured him the admiration of his supe-

Boscoi
Boscovich.

Boscovich. riors. In the course of three years he was able to give private lessons in the mathematics; and he was then exempted from the operation of a law, by which the novices were bound to teach Latin and the belles-lettres for five years before they commenced the study of theology. This exemption was in consequence of his great predilection for the mathematics, of which he was soon afterwards made public professor. For this professorship he was eminently qualified, as, besides a thorough knowledge of all the modern productions in the science, he had acquired a classical severity of demonstration by studying the works of the ancient geometricians; yet he conjoined withal an obliging accommodation of his own habits to the deficiencies of his pupils, and for their benefit composed elementary treatises on arithmetic, algebra, geometry, and trigonometry. But notwithstanding the arduous duties of his situation, he found time to instruct and enlighten more than boys; for about this period he formed some of those refined and original notions which were destined to grow up into the system that afterwards became so celebrated. The animating spirit of discovery and invention led him to consider every portion of physical science; and indeed so versatile and vigorous was his mind, that we should be at a loss to specify any one portion which, within a few years, it did not comprehend, elucidate, and advance. In confirmation of this it will be sufficient to present our readers with an enumeration of the principal subjects to which he turned his attention, and concerning which he published dissertations while he continued in the professorship. These were, the transit of Mercury over the sun, the spots in the sun, the aurora borealis, the construction of spherical trigonometry, the figure of the earth, a new telescope to determine celestial objects, the ancient arguments for the rotundity of the earth, oscillating circles; on infinities and infinitely small quantities, the motion of bodies in unresisting spaces, the aberration of the fixed stars, the inequalities in terrestrial gravity; on astronomy, on the limits of certainty in astronomical observations; on the solid of greatest attraction, the cycloid, the logistic curve lines, the *vires vivæ*, the comets, light, the tides, the rainbow, the calculation of fractions, the centre of gravity, the moon's atmosphere, the law of continuity, lenses and dioptrical telescopes, the objective micrometer, and the divisibility of matter. Some of these are short, but all of them contain curious and valuable matter. It is only by perusing them that we are able to discover the gradual progress of his mind, and to understand the manner in which he arrived at that theory of natural philosophy which is now known by his name.

About this time a taste for philosophical poetry was very prevalent amongst the learned, and some of Boscovich's acquaintances had laboured in it with success. Of these we may mention Father Noceti, who wrote on the rainbow and the aurora borealis, and Benedict Stay, whose poems on the philosophy of Descartes, and on the more modern philosophy, are considered as excellent examples of Latin composition. Boscovich published the works of both with annotations and supplements, in which a splendid fund of information and learning is displayed.

By such undertakings his fame was widely diffused, and he became an object of general admiration. The learned societies of many countries in Europe conferred on him unsolicited honours, and several foreign princes invited him to their courts. His opinions on various subjects of civil architecture, topography, and hydrodynamics, were solicited by Pope Benedict XIV., John V. of Portugal, and others. These applications necessarily required his presence in different states of Europe, where he never failed to enhance his reputation, and often terminated dis-

putes which, but for his judicious interference, might have had disagreeable consequences. Boscovich.

He was employed to correct the maps of the papal dominions, and to measure a degree of the meridian passing through them. In this operation he was assisted by an English jesuit named Christopher Maire. An account of their expedition was printed at Rome and Paris, and is interspersed with some curious anecdotes concerning the opinions which the peasants of the Apennines formed of them, and the operations which they had to perform; but it is chiefly valuable on account of the detail which is given of their observations.

In the year 1757 he was sent to Vienna by the republic of Lucca, to settle some differences which had arisen concerning the draining of a lake, in which the grand duke of Tuscany, the emperor Francis I., and that republic, were concerned; and it was after he had succeeded in the object of his mission to that city that he published there his *Theoria Philosophiæ Naturalis* in 1758.

Another occasion for his mediating powers soon presented itself, and more nearly interested him, as it concerned his native city of Ragusa. The British government having suspected that some ships of war had been fitted out in that port for the service of France, and that its neutrality had thus been infringed, this suspicion alarmed the senate of Ragusa, and required speedy removal, more especially as the consequences might have been extremely prejudicial to their commerce. Boscovich, who had often been successful in similar missions for other powers, appeared to them the fittest person to be intrusted with this. Accordingly, having been nominated by his countrymen, he repaired to London, where he effected the object of his mission with honour to himself and satisfaction to his native state. He visited the Royal Society, which received him with distinguished marks of respect; and he soon afterwards complimented it with an excellent Latin poem on the solar and lunar eclipses. This was in the year 1760. Boscovich was invited by the Royal Society to be of the party of their members about to proceed to America in order to observe the transit of Venus over the sun's disc. But the nature of his embassy, and the necessity of returning home, prevented his accepting the invitation. Soon after his return from this embassy, he was appointed by the senate of Milan to the mathematical chair in the university of Pavia, with the superintendence of the observatory of the royal college of Brera. He continued in this situation for six years, when the empress queen appointed him professor of astronomy and optics in the Palatine schools of Milan, and also requested that he would continue his attention to the observatory. This he expected to prove the most agreeable part of his life. Admired by the learned, beloved by his friends, and having an adequate income, with a sound and vigorous constitution, he promised to himself happy because useful days, in the tranquil cultivation of the sciences. But a cloud long impending now burst over his head, in the edict for the abolition of his order, which took place in the year 1773. No exemption from the edict could be procured; all who held offices were dismissed; and Boscovich sought refuge in the city of Paris. Thither indeed he was invited by Turgot, through whose means he was made one of the directors of optics for the sea service, and received a pension; but it would seem that his situation proved disagreeable to him; nor is this to be wondered at, considering the peculiar circumstances which had induced him to take up his residence in the French capital. He remained there, however, for ten years, on the expiry of which he set out for Bassano, in the republic of Venice, and there published, in five vo-

Boscovich. *lumes quarto*, a collection of the works which he had completed in Paris. The following is a pretty accurate enumeration of their contents: A new instrument for determining the refracting and diverging forces of diaphanous bodies; a demonstration of the falsehood of the Newtonian analogy between light and sound; the algebraic formulæ regarding the foci of lenses, and their applications for calculating the sphericity of those which are to be used in achromatic telescopes; the corrections to be made in ocular lenses, and the error of the sphericity of certain glasses; the causes which hinder the exact union of the solar rays by means of the great burning glasses, and the determination of the loss arising from it; the method of determining the different velocities of light passing through different media by means of two dioptric telescopes, one common, the other of a new kind, containing water between the objective glass and the place of the image; a new kind of objective micrometers; the defects and inutility of a dioptric telescope proposed and made at Paris, which gives two images of the same object, the one direct, the other inverse, with two contrary motions of movable objects; masses floating in the atmosphere, as hail of an extraordinary size, seen on the sun with the telescope, and resembling spots; the astronomical refractions, with various methods for determining them; different methods for determining the orbits of comets and of the new planet, with copious applications of these doctrines to other astronomical subjects, and still more generally to geometry and to the science of calculation; the errors, rectifications, and use of quadrants, sextants, astronomical sectors, the meridian line, telescopes called transit instruments, the meridian, and the parallactic machine; the trigonometrical differential formulæ, which are of so much use in astronomy; the use of the micrometrical rhombus, extended to any oblique position whatsoever; the error arising from refractions in using the astronomical ring for a sun-dial, and the correction to be made; the appearing and the disappearing of Saturn's ring; methods of determining the rotation of the sun by means of the spots; the greatest exactness possible in determining the length of a pendulum oscillating every second of mean time by the comparison of terrestrial and celestial gravity; a compend of astronomy for the use of the marine, containing the elements of the heavenly motions, and of the astronomical instruments, to be explained to a prince in the course of one month; a method for determining the altitudes of the poles with the greatest exactness, by means of a gnomon alone, where other instruments are not to be had; the determination of the illuminated edge of the moon to be observed on the meridian; a method of using the retrograde return of Venus to the same longitude, for determining the less certain elements of her orbit; a method for correcting the elements of a comet, of which the longitude of the node is given, and the inclination of the orbit has been nearly found; another method for the same purpose, and for finding the elliptical orbit, when the parabolic one does not agree with observation; a method for correcting the elements of a planet by three observations; the projection of an orbit inclined in the plane of the ecliptic; the projection of an orbit inclined in any other plane; the calculation of the aberration of the stars, arising from the successive propagation of light; and some beautiful theorems belonging to triangles, which are of great use in astronomy, reduced to the most simple demonstrations.

After the publication of these works, our author quitted Bassano, and went to Rome to visit the companions of his youth. From Rome he proceeded to Milan, where he revised some of his own works, and prepared for publication the two last volumes of Stay's poems. His death

took place on the 13th of February 1787, in the seventy-sixth year of his age.

Besides the different works above mentioned, Boscovich wrote several others on various subjects, as on the project of turning the navigation to Rome from Fiumicino to Maccaresse; on two torrents in the territory of Perugia; on the bulwarks of the river Ponaro; on the river Sidone in the territory of Placentia; on the bulwarks of the Po; on the harbours of Ancona, of Rimini, of Magna Vacca, and Savona; besides some others, almost all of which were printed. For an account of the system developed in the *Theoria Philosophiæ Naturalis*, see the article PHYSICS.

BOSHUANAS, called by some BICHUANAS, or BETJUANAS, a numerous people, or rather race, who occupy an extensive territory in Southern Africa. Their country is bounded on the south by the Cape Colony, on the east by the Caffre territory, on the north by the Makooas, and other tribes bordering on the Portuguese settlement of Mozambique. The western limit is partly unknown, partly composed of extensive deserts.

Down to the commencement of the present century, this people were entirely unknown to Europeans. Mr Barrow, indeed, in his second journey into the country of the Caffres, obtained some notices respecting them. In 1801, while the settlement laboured under a severe scarcity of cattle, two gentlemen belonging to it, Messrs Truffer and Sommerville, set out on an expedition, with the view of procuring a supply. Having passed, first the Great Karroo or Arid Desert, then the Snowy Mountains, and the territory of the rude Bosjesmans, they arrived at an extensive pastoral plain watered by the ample stream of the Orange river, and inhabited by the Koras or Koranas, who appeared considerably superior to any of the other Hottentot tribes. Here they met with a Boshuana, and received from him such accounts as induced them to accompany him to his own country. They soon passed the frontier, and entered on a fertile and finely-watered territory, where, after a few days' journey, they were surprised to find, in the heart of this rude and unknown region of Africa, what might almost be termed a city. The houses and streets of Lattakoo were built and arranged in a manner decidedly superior to any hitherto seen in the southern districts of this great continent. The king, a venerable old man, received them with kindness, and they became to all the natives objects of friendly curiosity. These people appeared to our travellers not only to have made considerable progress in the arts and in civilization, but to live together in a patriarchal simplicity and harmony, which almost realized the fabled pictures of the golden age.

Lord Caledon, then governor of the Cape, on receiving this interesting intelligence, determined to follow out the career of discovery thus opened. He dispatched Dr Cowan and Lieutenant Denovan, with a party of twenty, to endeavour to penetrate through the territory of the newly-discovered people, and if possible to reach the coast at Mozambique and Sofala, by which they would throw important light on a very considerable extent of the geography of Africa. The travellers experienced at Lattakoo the same friendly reception as their precursors; they then arrived at the residence of a chief called Makkrakka, who afforded them a still more cordial welcome. A letter was received from them, dated from the residence of this chief, in about 24. south latitude, in which they described the country as increasing in beauty and fertility, and as watered by a noble river flowing to the westward. Makkrakka sent forward his own brother to recommend them to the Wanketzens, the tribe immediately to the northward. Here they met at first with a reception altogether favourable; but this treacherous people, seeing them thrown

Boshuanas. off their guard, determined upon an attack, for the purpose of seizing all their property. The expedition imprudently separated into three parties, one of which went to bathe, while another remained in charge of the waggons; and a third of the cattle. The natives having attacked successively these three bodies, succeeded too fully in their atrocious design, and entirely cut off the English.

The government at the Cape did not for some time obtain any intelligence respecting this party, and the first rumour of the disaster arrived by way of Mozambique. No official mission has since been dispatched; yet several travellers, animated by liberal curiosity, or the benevolent desire of communicating to the natives the truths of the gospel, have penetrated even deeper into the interior of this region than those now mentioned. Dr Lichtenstein, after an extensive survey of the country of the Caffres, ventured, not without some apprehension, to Lattakoo, but met with a perfectly friendly reception. Being solicited, however, to give aid with fire-arms in a war against Makkrakka, the traveller, unwilling to involve himself in these interior African contests, wisely took the first opportunity of returning, after gaining, however, a good deal of information. In 1813, the Reverend Mr Campbell, at the request of the Missionary Society, and with a view to promote its objects, ventured on an expedition into this territory. Although the dispositions of the people were not altogether such as he could have wished, he had no personal cause of complaint. Lattakoo was found (a change not uncommon in Africa, and consequent upon a schism among its inhabitants) to have been transported about sixty miles from its former situation. It appeared also diminished in size, not containing above 1500 houses and 8000 inhabitants. Although unable to effect any conversions, he obtained, with some difficulty, permission for missionaries to settle here, and a promise of good treatment. In 1820 he returned and found the establishment in a tolerably flourishing state. The missionaries had neat houses and gardens built for their use, with a chapel capable of containing 400 persons, though it was very thinly attended. Mr Campbell penetrated northwards to Mashow, Meribohway, and Kurrechane, towns larger than Lattakoo, and governed by separate chiefs. Mr Burchell afterwards, in the course of an extensive tour through Southern Africa, penetrated beyond Lattakoo, and westward to Bakarrikarri, on the confines of the Great Desert. We have thus, from a succession of intelligent travellers, very satisfactory information respecting this country, and the tribes by which it is inhabited.

The Boshuanas are proved, both by their form and language, to belong to the same race with the Caffres; but their persons are less vigorous, and in the male sex less strikingly handsome; yet many of their females possess a great share of beauty. Although they are not on the whole so fine and manly a race, yet they have made a greater progress in the useful and even ornamental arts. Agriculture is carried on with considerable diligence; though, as is too common in barbarous tribes, its labours are devolved entirely on the female sex, who have the additional task of building the houses and fashioning the furniture and dress. The men, on the other hand, take the entire charge of the cattle, which constitutes their chief wealth. Cultivation is confined to the spaces surrounding their towns, which are built on heights for the purpose of defence; and the cattle are driven out every morning to feed, often at a considerable distance, and brought back at night within the circuit of the inclosures. The habitations are neat and commodious, being encircled with substantial walls of earth or stone; and some parts are moulded into pillars, or other ornamental shapes, and carefully painted. At Kurrechane iron and copper

were smelted in large furnaces of clay; and they had Boshuanas. well constructed vessels of earthenware for holding their grain and stores. The men are dressed chiefly in skins, often prepared with considerable ingenuity; whilst those of wild animals are thrown over their shoulders for ornament. The ladies of rank wear ample mantles, profusely embellished with beads, rings, and various species of ornaments. Makaitshoah, the beautiful wife of the king of Lattakoo, appeared to Dr Lichtenstein, having her robe trimmed with rich furs, a large bundle of cats tails hanging from the left shoulder, and one arm loaded with no less than seventy-two copper rings; the display of which appeared to be an object of peculiar pride.

In regard to their political situation, they have kings who rule with a species of patriarchal authority, and chiefly by means of influence and persuasion. When any affair of great importance is to be decided, a *pectso*, or general assembly of the chiefs and warriors, is summoned. These assemblages are carried on in a peculiar, and even extravagant style. The chiefs on their way indulge in strange gestures and gambols. Before entering on deliberation they commonly join in a song, whilst the principal orator often strikes up a dance. Every speech is prefaced by three tremendous howls or yells, sometimes imitating the cries of animals, while several of the attendants dance in unison. As the debate proceeds, the female citizens form an exterior circle, and by loud cheers or derisive laughter express their sense of the observations made by the speakers.

The distinctions of wealth, and even of rank, are pretty strongly marked in this society; yet they have little influence on the general train of social intercourse. Mattebe, or Mattivi, the chief whom the travellers call king, was seen seated on the ground smoking and exchanging pipes with the most ordinary citizens. He does not interfere in private quarrels, even when they proceed to bloodshed; this is considered to be an affair between individuals. He waits till his arbitration is called for, and then proceeds, often in a very summary manner, executing with his own hand the sentence pronounced.

A considerable degree of internal union and harmony prevails among these tribes. Their manners, making no pretensions to any high refinement, are neither coarse nor boisterous; their general deportment is frank and cordial, and a kind and friendly spirit towards one another seems to prevail. But the intercourse of different states with each other forms a complete scene of violence and rapine. *Commandos*, or forays, to carry off the cattle of their neighbours, and kill all who oppose them, form their most favourite employment. They seem to consider themselves born for this purpose; and the number of cattle which they have carried off, and of men whom they have slain, is through life their highest boast. Dr Lichtenstein even states, that on returning from a successful expedition they celebrate a horrid feast, in which each produces a portion of the flesh of his slaughtered enemy, which he roasts and devours. Towards strangers their behaviour has been generally friendly and hospitable. Mr Campbell's party were indeed astonished, on arriving at one of the towns, to see the warriors rushing forth to meet them, brandishing their battle-axes, painted red, and dressed in the skins of wild beasts; but this soon proved to be only a form of barbarous welcome. After the first ceremony was over, however, they began actively to beg, and even to pilfer tobacco, a European luxury of which they soon became excessively fond. The missionaries have been always well treated, but have never made much progress in their main object. Engrossed by their tumultuary occupations of pasturage and war, this people seem to have a peculiar apathy towards all spiritual and abstract ideas. They

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seem also, from Mr Burchell's observation, to be familiar with all the forms of superstition prevalent among an ignorant people.

In advancing northwards into the interior, the country seems to improve, becoming more populous, while the people are more industrious, and better skilled in the arts. Mashow, beautifully situated on a hill, was estimated to contain 10,000 or 12,000 inhabitants; and it was surrounded by twenty-nine villages, within a circuit of twenty miles of cultivated territory. Kurrechane, still larger and more handsomely built, was supposed to contain 16,000 or 17,000 people.

This country was exposed in 1823 to a most disastrous invasion, from a predatory and ferocious race called the Mantatees, or "wanderers." They were in fact a collected multitude of different Caffre tribes, flying before the attack of the Zoolas, who had formed a dominion on the coast of Natal. The invaders were estimated at 40,000 warriors, almost naked, armed with clubs, spears, and battle-axes, and having their legs adorned with numerous brass rings. They succeeded in sacking Kurrechane; and, after being repulsed from another town, advanced upon Lattakoo, where they spread the most deadly consternation; the inhabitants not being possessed of courage sufficient to enable them to face such a formidable attack. They received, however, the aid of a party of Griqua Hottentots, who had learned from Europeans the use of fire-arms; and after an obstinate conflict turned to flight this immense multitude, and obliged them to retreat within the Caffre territory. (E.)

BOSJESMANS, or BUSHMEN, a race of Hottentots who inhabit the sides and valleys of the Sneeuwberg, or Snowy Mountains, which form the northern boundary of the colony of the Cape of Good Hope. They are rude and savage in the extreme, and, perhaps beyond any other race in existence, deformed and miserable. Their persons present a caricature of that hideous form which characterizes the Hottentot; the hollow back, the large belly, and protruding posteriors, causing them to exhibit nearly the shape of the latter S. Destitute of cultivation, and being allowed to occupy only the most dreary and barren tracts, they find the utmost difficulty in procuring a scanty supply of the most wretched aliments. Wild animals pursued across rugged rocks, roots dug from the earth, and the larvæ of ants and insects, form their only regular resources. To this indeed they add frequent predatory excursions in order to carry off the cattle from the store-farms in the plains below; but this involves them in a severe and unequal contest, since their arrows, though tipped with deadly poison, and shot with surprising dexterity, are not a match for the fire-arms of the colonists. They are hunted down like wild beasts, and, wherever they appear, are shot without the smallest scruple. Mr Barrow met with a young man who had made a journey along part of their territory, and who being asked if he had seen any of them, replied with an air of disappointment, that he had shot only four. From their mode of life, they derive the power of enduring fasting for an extraordinary length of time; though, when they have succeeded in carrying off a sheep or other animal, they devour the flesh without intermission, till it is entirely consumed. Yet they display nothing of that sluggish and gloomy deportment which characterizes the servile Hottentot. They bound with wonderful agility from rock to rock, either in flight or in chase of their prey; and on certain festive occasions, they give way even to an extravagant gaiety; dancing whole days and nights without intermission, especially by moonlight. Even the pictures of animals which they delineate on the rocks are not altogether destitute of spirit or resemblance.

BOSNIA, the farthest north-east province of Turkey in

Europe. It is bounded on the north by Austria, from which it is divided by the rivers Unna and Save; on the east by Semendra and Aladsehaissar; on the south-east by Beldsehterin and Dukagin; on the south by Iscandria and Austria; and on the west by Austria. It extends over 13,000 square miles. The whole province is mountainous, many of the summits reaching to the height of 6000 feet. From the nature of the soil, it is more appropriate for the breeding of cattle than the operations of the plough. The chief kind of cattle reared are sheep in large flocks, some good horses and cows, with here and there a few buffaloes and goats. There are a few mines of copper; and formerly some of gold and silver were worked, especially a very celebrated one at Jlatnizza; but they are now neglected. There are some quarries of good marble; and at Tuzla a very copious and strong spring of salt water, which is converted into culinary salt. The manufactures are of the domestic kind, and upon a small scale, for making leather, cloth, and iron wares. The number of inhabitants, as in all Turkey, is doubtful. The country is thinly peopled; some accounts stating the inhabitants at 850,000, others at no more than 600,000, but all agreeing that the majority are Christians chiefly of the Catholic church.

BOSPHORUS, or BOSPORUS, in *Geography*, a long and narrow channel running in between two lands, or separating two continents, and by which two seas, or a gulf and a sea, communicate with each other. In this sense Bosphorus means a channel or strait, and is synonymous with what the Italians call *faro*, the Latins *fretum*, and the French *pas* or *manche*. The word is Greek, *βοσπορος*, being formed of *βους*, an ox, and *πορος*, passage, probably from an idea that an ox or bullock might swim across.

The name of Bosphorus is chiefly confined to two straits, namely, the Bosphorus of Thraee, commonly called the Strait of Constantinople, or Channel of the Black Sea; and the Cimmerician or Seythian Bosphorus, now known by the name of the Strait of Jenikale. The origin of the name is not disputed; but various mythological legends, some of them absurd enough, were invented to account for its first application.

BOSQUETS, in *Gardening*, groves so called, from *boschetto*, an Italian word which signifies a little wood. They are compartments in gardens formed by branches of trees disposed either regularly in rows, or wildly and irregularly, according to the fancy of the owner. A bosquet is either a plat of ground inclosed with palisades of horn-beam, the middle filled with tall trees, the tops of which form an umbrageous covering; or it consists only of high trees, as horse-chestnut, elm, and the like.

BOSSINEY, a small borough in Cornwall, in the parish of Tintagel and hundred of Lesneweth. It is sometimes called the town of Trevenna. The ruins of a castle near it, according to the local tradition, are said to be those of the palace in which King Arthur was born, and where the ancient dukes of Cornwall resided. The inhabitants amounted in 1801 to 649, in 1811 to 793, and in 1821 to 877.

BOSSO, in Latin Bossus, *Matthew*, distinguished by his virtue and his learning, was born at Verona in 1428. He devoted himself to the ecclesiastical state in 1451, in the congregation of regular canons of St John de Lateran, and afterwards taught divinity at Padua. His orations, his sermons, and his letters, have often been printed. He was also the author of a sort of an apology for Phalaris, and other works; and died at Padua in 1502, aged seventy-five.

BOSSU, RENE LE, born at Paris on the 16th March 1631, studied at Nauterre, and then entered among the regular canons of Sainte-Geneviève in 1649. After hav-

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Bossuet. ing professed the humanities in different religious houses for twelve years, he withdrew into retirement, and died on the 14th March 1680. His first publication was *Parallèle des Principes de la Physique d'Aristote et de celle de René Descartes*, which appeared in 1674. He attempted, says Voltaire, to reconcile Aristotle and Descartes; he was not aware that it had become necessary to abandon both. His next work, entitled *Traité du Poème Epique*, was published in 1675, and often reprinted afterwards. The leading doctrine of this treatise is, that the subject should be chosen before the characters, and that the action should be arranged without reference to the personages who are to figure in the scene; a doctrine which led Voltaire to observe that every epic poet who followed the rule of Bossu would be sure of never being read, but that happily it is wholly impossible to follow it. Nevertheless, Boileau, in his *Third Reflexion on Longinus*, pronounces the work of Le Bossu "l'un des meilleurs livres de poétique qui, du consentement de tous les habiles gens, aient été faits en nôtre langue." In abatement of this commendation, however, it may be stated, on the authority of Le Courayer, that Le Bossu had stepped forward as the champion of Boileau against Saint-Sorlin, by whom he had been attacked; that Boileau expressed himself exceedingly grateful for this service; and that a sense of obligation, as much, perhaps, as a sense of justice, may have dictated the commendation bestowed on the work in question.

BOSSUET, JAMES BENIGNE, one of the most illustrious prelates which the church of France, so fruitful in great men, has ever produced, was born at Dijon on the 27th September 1627. He was descended from an ancient and noble family in Burgundy. On the establishment of the parliament of Metz, his father was appointed one of its counsellors. Being destined by his parents for the church, the young Bossuet took the clerical tonsure before he had completed his eighth year. At first he was placed under the care of his uncle, the first president of the parliament of Metz; and he used to relate that, while a mere boy, under his uncle's roof, he read the Old Testament with a relish and delight far exceeding any pleasure he afterwards felt on the perusal of any other work. His uncle afterwards placed him at the college of the Jesuits at Dijon, where he applied himself to his studies with such labour and success that they desired to attach him to themselves; but in 1642 his uncle sent him to Paris to the college of Navarre. Here, under the direction of the celebrated Nicholas Cornet the principal, Bossuet made rapid progress in Greek and philosophy, relieving his studies from time to time by reading the best works of antiquity; but the Scriptures and religious books always occupied a large share of his time. At the age of sixteen he supported his first thesis in a manner which gave indications of his future greatness, and which caused him to be already regarded as a prodigy. An extempore sermon which he shortly afterwards delivered, at the Hotel of Rambouillet, in presence of an assembly partly composed of the most celebrated men of the time, excited general admiration.

He was admitted into the corporation of the college at the age of twenty, on which occasion he chose for the subject of his thesis a comparison between the glory of this world and that which awaits the just in the next. During the delivery of this discourse, the great Condé, who had just dazzled France by the splendour of his victories, suddenly entered the hall, surrounded by a number of his companions in arms. The orator, without interrupting his harangue, immediately addressed himself to the young conqueror, and, in the name of France, paid him a just and appropriate tribute of admiration and praise; but he told him at the

same time how vain and perishable was the glory which he had acquired. Forty years after, Bossuet repeated the same truths over the bier of the princely warrior. During the whole of that long period he had enjoyed his friendship and esteem.

In 1652 Bossuet took the degree of doctor, and received also the order of priesthood. In thus devoting himself to the cause of religion, he exclaimed, "Under thy auspices, O sacred Truth, I will joyfully approach those altars, which are to witness the oath I am about to take; an oath which our ancestors have often heard; that most pleasing and most sacred oath, by which I am to bind myself, even to death, to the holy cause of truth." After passing some time in the retreat at St Lazarus, under the discipline of St. Vincent de Paul, whose friendship he had obtained, he went to Metz, in the cathedral church of which city he had previously obtained the preferment of a canonicate, and where he was successively raised to the rank of archdeacon and dean. He now applied himself wholly to the duties of his ministry, edifying those who surrounded him by the purity of his life, and astonishing them by the splendour of his talents. His first appearance as an author was in 1655, when he published his *Refutation of the Catechism of Paul Ferry*, a Protestant minister highly esteemed for his learning and talents. This work advanced his reputation greatly with his own party, and, it is said, gained him even the respect of the Protestants. The affairs of the cathedral rendering his presence necessary in Paris, he often preached there; and his sermons were so universally applauded, that he was appointed to preach in the chapel of the Louvre before Louis XIV. during the Lent of 1663. His Majesty signified the pleasure he derived from his sermons in a letter which his private secretary wrote by his desire to Bossuet's father.

In 1669 he was nominated to the bishopric of Condom, but being appointed preceptor to the Dauphin the following year, he resigned his see, because he considered his new charge as inconsistent with the duty he owed to his diocese. For the instruction of the Dauphin he composed his work on universal history, which he divided into three parts. The first part is purely chronological; but it has been well observed that it scarcely contains a sentence in which there is not some noun or verb that conveys an image or suggests a sentiment of the noblest kind. The third part, which is historical, contains the most profound reflections on the rise and fall of empires. "But in the second part of it," as one of his biographers observes, "the genius of Bossuet takes its highest flight. He never appears on the stretch of exertion; he is never lost in the mazes of argumentation; but, in a continued strain of sublime eloquence, he displays the truths and proofs of the Christian religion with a grandeur of thought, a magnificence of language, and a force of evidence, which nothing can withstand. A nobler work in support of Christianity has never issued from the press." This work was first published in 1681. Ten years before, he had published his *Exposition of the Doctrine of the Catholic Church in Matters of Controversy*, which was speedily translated into all the living languages of Europe. Pope Innocent XI. formally approved of it by two successive briefs on the 22d November 1678 and the 12th July 1679; and the Gallican clergy in their assembly of 1682 gave it also the seal of their approbation. It has therefore, we believe, been regarded as a correct exposition of the tenets of the Roman Catholic Church.

The publication of the *Exposition* gave rise to the famous conference between Bossuet and M. Claude, one of the ablest divines of the reformed church in France. As a specimen of the argumentative powers of both champions, we shall select a few sentences from that part of

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the conference which relates to the right of private judgment in matters of faith. On the one hand, Bossuet contended for an unconditional submission to the authority of the church; while, on the other, M. Claude only admitted a conditional submission to the decrees of the national assembly of his own, or those of any other church, or, in other words, that a conscientious submission could only be required if the party thought their determinations were conformable to the word of God. "Surely," said Bossuet, "this right of individual examination, which you recognise in each individual, must be accompanied with the highest individual presumption." "That by no means follows," replied M. Claude; "when the synagogue declared that Jesus Christ was not the Messiah promised by the prophets, and condemned him to death, would not an individual who believed him to be the true Christ have judged better than the synagogue? Could you accuse such an individual of *presumptuously* believing that he understood the Scriptures better than all the synagogue?" It is impossible to conceive a more able reply than this. It produced, as it ought, a powerful impression on the audience, and even staggered the great champion of the Catholic church. After a short pause, during which he says he offered up a mental prayer for light and direction from above, he thus addressed M. Claude: "You say that my assertion, that the individual who sets up his private opinion in opposition to that of the whole church must be guilty of intolerable presumption, fixes the charge of equal presumption on those who believed in Jesus Christ in opposition to the sentence of the synagogue which had pronounced him guilty of blasphemy. Most certainly my assertion proves nothing of the kind. When an individual *now* sets up his own private opinion in opposition to that of the whole church, he sets it up against the highest authority on earth, as the earth contains no authority to which an appeal from that authority can be made. But when the synagogue condemned Jesus Christ, there was on earth a much higher authority than the synagogue; to that authority the individual who reprobated the proceedings of the synagogue might appeal. Truth herself *then* visibly existed among men—the Messiah, the eternal Son of God,—He to whom a voice from above had rendered testimony, by proclaiming before the whole people that he was the well-beloved Son of God,—He who restored the dead to life, gave sight to the blind, and did so many miracles, that the Jews themselves confessed no man had done the like before him,—He, the Jesus himself, then existed among men, and was the visible external authority to whom there was a lawful appeal from the synagogue. His authority was infallible. I hear you say that it was a contested authority. I know that it was contested; but, as a Christian, *you* are bound to say that no individual could reasonably or conscientiously contest it. It was not, therefore, presumption—it was duty to disobey the synagogue and believe in Christ. Bring back to me Jesus Christ in person; bring him teaching, preaching, and working miracles—I no longer want the church: but don't take the church from me, unless you give me Jesus Christ in person. You say you have his word. Yes, certainly, we have his holy, adorable word; but what is to be done with those who understand it in a wrong sense? Jesus Christ is not present in person to set them right: they must therefore obey the church. Before Jesus Christ appeared among the Jews, they were bound to obey the synagogue. When the synagogue failed, Jesus Christ came among men to teach them all truth, and they were bound to obey his voice. When he returned to his Father, he left us his church, and we are bound to obey her voice. There is not—no, there is not on earth any visible higher authority to which you can

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appeal from her." This is, no doubt, very ingeniously argued; but, considered as a piece of mere reasoning, it proceeds upon an assumption which cannot be admitted without separate proof, and it evades the case so forcibly put, by introducing the subject of *time*, which, in truth, formed no element in the question at issue. Further, it is evident that, *mutatis mutandis*, the same reasoning might have been employed by the Rabbin of the synagogue, who, on grounds precisely identical, might have argued in favour of the divine authority of the church established by Moses.

Having finished the education of the Dauphin in 1681, the king nominated Bossuet to the bishopric of Meaux, and he entered with zeal upon the duties of his new episcopate. He took a very active part in the general assembly of the church of France held the following year, and drew up the celebrated declaration of 1682 against the attempted encroachments of the see of Rome. Bossuet now directed all the energies of his powerful mind to the most important of all his controversial works, the *History of the Variations of the Protestant Churches*, which was first published in 1688. Gibbon in his younger years was converted to the Roman Catholic faith by perusing this work, retiring for a while, like Chillingworth, to use the expression of Dr Johnson in his *Life of Dryden*, into the bosom of an infallible church. It has been remarked as a singular coincidence, that although no writers were ever more opposed in sentiment than Bossuet and the author of the *Decline and Fall of the Roman Empire*, yet the latter (c. 54) adopts and aggravates the charges made by Bossuet, in his *History of the Variations*, of the alleged Socinian tendency of the principles of the Reformation.

During the last years of his life Bossuet was much occupied in the hopeless scheme of effecting a union between the Roman Catholic and Protestant churches. The negotiation was first carried on with Molanus, who limited his views to a junction between the Roman Catholic and Lutheran churches, a plan which many persons considered by no means impracticable. But Leibnitz, who succeeded Molanus on the part of the Protestants, being desirous of including the whole Protestant churches in the arrangement, the negotiation failed, as might have been expected, after a correspondence of ten years.

It was the fate of Bossuet to be involved in religious controversy during the greater part of his life. He entered the arena at the age of twenty-eight, and during the fifty years which followed, his pen was in constant requisition. He composed with ease, but, like Burke, he laboured hard to improve his writings, and did not cease to alter them till they issued from the press; yet the style of both is as free as if it had been quite spontaneous. Some of Bossuet's principal writings against the Protestants have been mentioned. He was also engaged in controversies with persons of his own communion. That with the amiable Fenelon is the most conspicuous. The mystical speculations of Madame Guyon of Port Royal having found an abettor in the person of the author of *Telemachus*, in a work on the maxims of the saints, Bossuet drew up his *Rélation du Quétisme*, in which the archbishop was attacked with great severity. Fenelon published a reply, in which meekness, simplicity, and grandeur of mind were admirably blended. The writings in this controversy are amongst the finest in French literature; but Quietism being a perishable topic, these writings are now seldom read. In this contest the eagle of Meaux carried off the palm of victory.

Among the writings of Bossuet, his sermons and funeral orations are particularly to be distinguished. Of the latter, the finest is that on the death of Henrietta-Anne, the daughter of our Charles I. and wife of the duke of Orleans. As his funeral orations place him in the first class of orators, so his sermons unquestionably rank him

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in the first line of preachers. It has been observed that Bourdaloue and Massillon alone can dispute his pre-eminence. In the opinion of Voltaire, the eloquence of Bossuet stands unrivalled. This great prelate died on the 12th of April 1704, in the 77th year of his age. Massillon and other French writers have eulogised the talents and virtues of Bossuet in terms of the highest admiration; and he is thus noticed by the Reverend Mr Eustace, in his *Classical Tour*: "Bossuet was indeed a great man, and one of those extraordinary minds which, at distant intervals, seem as if deputed from a superior region to enlighten and to astonish mankind. With all the originality of genius, he was free from its eccentricity and intemperance. Sublime, without obscurity—bold, yet accurate—splendid, and yet simple at the same time,—he awes, elevates, and delights his readers, overpowers all resistance, and leads them willing captives to join and to share his triumph. The defects of his style arise from the imperfection of his dialect. And perhaps he could not have given a stronger proof of the energies of his mind than in compelling the French language itself to become the vehicle of sublimity. His works, therefore, are superior to all other controversial writings in his own or any other language." His works were collected and published soon after his decease in twelve volumes quarto. The Benedictines of St Maur published another edition; but a more complete edition, in forty-three volumes octavo, was published in 1815–20. Cardinal de Bausset wrote a history of the life of Bossuet, which was published in four volumes octavo. (A.)

BOSSUPT, a town of the Netherlands, in the province of Brabant. Long. 4. 30. E. Lat. 50. 52. N.

BOST, a very strong town of Persia, and capital of the province of Zablestan. Long. 64. 15. E. Lat. 31. 50. N.

BOSTANGIS, in Turkey, persons employed in the garden of the seraglio, out of whose number are selected those who row in the grand signior's brigantines, when he has a mind to divert himself with fishing, or to take the air upon the canal.

BOSTON, a market-town and borough of the hundred of Skirbeck, in the county of Lincoln, 140 miles from London, on the river Whitham, which divides it into two parts. The river is navigable, and is joined by a canal which connects it with the city of Lincoln. It is in a marshy situation and has a dense atmosphere, but the land surrounding it is highly fertile. The chief object of attention is the church with its lofty tower, 290 feet in height, which having a lanthorn at the top, is a valuable object to ships approaching that flat coast. There is much trade carried on in corn with the metropolis and other parts of the kingdom. The markets are held on Wednesdays and Saturdays. The inhabitants amounted in 1801 to 5926, in 1811 to 8113, and in 1821 to 10,373.

BOSTON, the capital of Massachusetts, is the largest city of New England, and the second in commercial importance in the United States. It is situated at the bottom of Massachusetts Bay, at the mouth of Charles River. It stands principally on a small peninsula of elevated ground, two miles and three quarters in length by one in breadth, and is connected with the continent by an isthmus and by seven bridges. South Boston stands without the peninsula; and including it, the city covers a surface of nearly three square miles. The harbour is capacious, and has a depth of water sufficient to admit the largest ships of war. The anchorage is excellent, the shipping being protected from storms by numerous islands, on several of which are fortifications. With one exception, all the bridges are of wood. That which connects Boston with Cambridge, a minor town, is 3483 feet in length, and is supported by 180 piers. The *western avenue*, as it is called, leading across the bay from the western

part of the city to Roxburgh, is 8000 feet in length, and is formed of solid earth supported on each side by stone walls. It serves the double purpose of a bridge and a dam, by means of which, and a cross dam, two large basins are formed, one of which fills at flood-tide, the other is emptied at ebb-tide; and thus a perpetual water power is created for driving machinery. The wharfs of Boston are spacious, and afford ample accommodation to shipping and storehouses for merchandise. The streets are mostly narrow and irregular, but well paved. The number of dwelling-houses is about 10,000, besides the store-houses and shops, which are numerous. The greater part of the buildings are of brick, but some are of granite and sienite. Many of the dwelling-houses are large and well built. The principal public edifices are the state-house, which stands on the highest part of the city; the county court-house; Faneuil hall; the Massachusetts general hospital; the Faneuil hall market; about forty churches; ten public school houses; two theatres; a house of industry; a house of correction; and a county jail. The city is divided into twelve wards. The municipal government is vested in a mayor, eight aldermen, and a common council of forty-eight members, who are annually chosen by the citizens. There are a great number of well-conducted schools, and a variety of charitable institutions, in Boston. Harvard University, which is the principal literary institution in the vicinity, is situated at Cambridge, three miles distant from the city. The Boston Athenæum has two large buildings, one containing a library of about 24,000 volumes, and the other a picture gallery, with a hall for public lectures, and other rooms for scientific purposes. Among the literary and scientific societies of Boston are the American academy of arts and sciences, the historical society, the Massachusetts medical society, and a mechanics' institution. There are six newspapers published daily, three twice a week, several weekly, and a number of other periodicals, amongst which are the *North American Review* and the *Christian Examiner*. The pursuits of the inhabitants are in a great measure mercantile. They carry on an extensive foreign trade. The shipping owned in 1828 amounted to 161,583 tons. The annual imports amount to about 13,000,000, and the exports to about 9,000,000 dollars. Many varieties of manufactures are carried on here.

Boston was founded in the year 1630, and received its name from a borough so called in England, from which a portion of the inhabitants had emigrated. It was the birth-place of Benjamin Franklin, and here the war of American independence began. Since the year 1783 the population has gone on doubling in about twenty-three years. In 1810 the number of inhabitants amounted to 33,250, and in 1829 to about 60,000. Boston is situated 210 miles north-east of New York. Long. 71. 4. W. Lat. 42. 22. N.

BOSWELL, JAMES, Esq. of Auchinleck, in the county of Ayr, whose life of Dr Samuel Johnson entitles him to a place among those who have contributed to the great stock of intellectual wealth, was the eldest son of Alexander Boswell, styled Lord Auchinleck, one of the judges of the supreme courts of session and judiciary in Scotland. He was born in the year 1740, and, having received the rudiments of his education, partly in his father's house, and partly at Mr Mundell's school in Edinburgh, successively prosecuted his studies at the universities of that city and of Glasgow. He was destined by his father for the Scottish bar; a pursuit with which his own inclinations did not much accord, and instead of which he would gladly have substituted one of greater activity and enterprise. His father's wishes, however, and his own sense of filial duty, prevailed; and, as the study of civil law at one of the foreign universities was then included in the most liberal plan of education for a

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Scottish advocate, it was determined that Mr Boswell should repair for that purpose to Utrecht, with a permission, before his return, to make the tour of Europe.

Already, however, those traits of character might be observed which gave a peculiar direction to his after-life. He was very early ambitious of being admitted into the society and friendship of men distinguished by talent and public estimation, more especially those of eminence in the literary world; and his natural urbanity, as well as gaiety of disposition, rendered it no difficult matter to gratify his propensity. While at the university of Glasgow, he had formed a particular intimacy with Mr Temple, the friend of Gray, afterwards vicar of St Gluvias in Cornwall; and he was known to many of the conspicuous characters at that time in Scotland, among others, to Lord Kames, Lord Hailes, Dr Robertson, and Dr Beattie. But the most remarkable acquisition which he made of this kind was his acquaintance with Dr Johnson, which commenced in 1763, and was destined to prove at once the principal era in his own life, and the means of adding not a little to the fame of the philosopher.

Mr Boswell had visited London for the first time in 1760, when he accidentally became acquainted with Derrick, afterwards *King* Derrick, as the master of ceremonies at Bath was then fantastically titled, and by him was initiated into the arcana of London life. In 1763 he proceeded to Utrecht. Having passed a year at that university, he travelled into Germany and Switzerland, was entertained by Voltaire at his castle of Ferney, and conversed with Rousseau in the solitudes of Neufchatel. He continued his route to Italy; but, led by his natural enthusiasm, forsook the common lines of travel, and passed over to Corsica, which, after a contest of more than thirty years, was still struggling for independence with the republic of Genoa. He thus describes his feelings while he approached the island: "As long as I can remember anything, I had heard of the malcontents of Corsica: it was a curious thought that I was just going to see them." Rousseau had given him a letter of introduction to the romantic Paoli; and his tide was suddenly at the full. In the small court of this simple but dignified chieftain he found everything to gratify his taste for the virtuous and sublime in natural character. He became a favourite, too, in his turn; was caressed by the islanders, admitted at all times to the society of their leader, and not only witnessed the movements of their political machinery, but appeared to be himself an actor in the scene. Of his visit to this island he published a narrative on his return to Scotland, entitled *An Account of Corsica, with Memoirs of General Pasquale de Paoli*, printed at Glasgow in 1768. This book was translated into the Dutch, German, French, and Italian languages. He likewise printed, in the following year, a collection of *British Essays in favour of the Brave Corsicans*; and made such attempts as he could to interest the British government in favour of that people, before they were finally crushed by the pressure of the French arms. His acquaintance and friendship with General Paoli were afterwards renewed in London, when that chief, having escaped with difficulty from his native isle, found an asylum in the British dominions.

From Corsica Mr Boswell repaired to Paris; and, returning to Scotland in 1766, he was admitted to the bar. Soon after, he published a pamphlet, under the title of *Essence of the Douglas Cause*; written while that great suit was depending in the Court of Session, with a view to excite the public interest in favour of Mr Douglas. In 1769 he was married to Miss Montgomery, daughter of

David Montgomery, Esq.; an accomplished lady, in whose society he enjoyed every domestic happiness.¹

In the year 1773 Mr Boswell was admitted into the Literary Club, which then met at the Turk's Head in Gerard Street, Soho, and of which Dr Johnson had been an original member. Here he had the pleasure of associating with Burke, Goldsmith, Reynolds, Garrick, and other eminent persons.

Dr Johnson had long projected a tour to the Hebrides; and Mr Boswell at last prevailed upon him, in the course of this year, 1773, to put the plan in execution, and became the companion of his journey from Edinburgh. During this excursion, they saw whatever was most remarkable in the Western Highlands and Isles; and here Mr Boswell was again at large in his natural element. Conscious of the advantages which he enjoyed, and aware of their value, he improved every opportunity of knowledge and remark, and has preserved a faithful record of all. His feelings were like those which Dante ascribes to the pilgrim, who, having paid his vows,

"Long gazes on the holy fane, and thinks
How he shall paint it when he reaches home."

Both travellers gave to the world an account of this tour. Mr Boswell's *Journal* was published in 1785. In the course of this work he has given a simple and very interesting narrative of some minute circumstances attending the escape of Prince Charles Edward after the battle of Culloden, collected from the information of persons on the spot, and privy to his concealment; particularly from the celebrated Flora Macdonald, whom they visited at Kingsburgh, in Sky, and from Malcolm Macleod, who had been the faithful and intelligent companion of the Wanderer's flight.

Lord Auchinleck died in 1782; and, a few years after (1786), Mr Boswell, giving up his law pursuits at Edinburgh, removed with his family to London, towards which, as a great emporium of literature and theatre of varied life, his inclinations had always tended. He had recently before been called to the English bar. He did not, however, prosecute the profession, but gave himself up to his natural bent for society and letters. After Dr Johnson's death, in 1784, he was occupied for several years in collecting and arranging, with indefatigable diligence, the materials for a narrative, which he had long projected, of that eminent man's life.²

Besides the works which have been already mentioned, he was the author of two Letters addressed to the People of Scotland; being his only productions of a political character. In the first of these, which was published in 1784, he appeared as an advocate for the new administration, then recently formed. The second Letter, written in 1785, was a strenuous appeal against a measure brought forward under the sanction of the same ministry, for effecting a reform in the Court of Session in Scotland, by reducing the number of the Judges.

Mr Boswell died on the 19th June 1795. In his private character, he was loved by his friends, as well as a favourite in the circles of social life; and, if his attachments were often suddenly formed, they were not less durable on this account. Whatever he has written is favourable to virtue; and, during a course of living which naturally dissipates the mind, his moral principles remained entire, and his religious faith unshaken. "Few men," says his friend Sir William Forbes, in a letter published in his *Life of Dr Beattie*, "possessed a stronger sense of piety, or more fervent devotion—perhaps not always sufficient to regulate his imagination, or direct his conduct, yet still genuine,

¹ He had a family by her of two sons and three daughters. Mrs Boswell died in 1790.

² *Life of Samuel Johnson*, LL.D. 2 vols. 4to. London, 1791.

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and founded both in his understanding and his heart." His talents would probably have been rated higher if they had not been obscured by certain eccentricities of character; yet his writings bear sufficient testimony to his natural abilities, and to the delicacy as well as aptness of his intellectual touch. He has described himself as being of a temperament inclined to melancholy; but in society he was remarkable for the gaiety of his disposition, and his life was full of activity and stir. To be distinguished was his ruling passion, and he indulged it freely. He sought those whom the world, on whatever account, held in honour; and he was desirous of being known as one with whom they assorted, and who possessed their friendship. He was fond of his pedigree and family connections, and he aspired after literary fame. While some of these propensities have been common to the great and good in every age, others, it must be confessed, are more frequently harboured than avowed. Mr Boswell adopted the latter and more unusual course.¹ He fairly owned his passion, and, if not thus secured from attack, had all those advantages, at least, which are gained by meeting an enemy in the field. But, in reality, he has dealt so openly, and with such candour, on every occasion which touches himself as well as others, that he wins not only our forgiveness, but our affection, and maintains, by ingenuousness and complete truth of character, a kind of superiority over any person who should feel desirous of assailing him. Nor was evidence of a substantial sort wanting to show the independence of his mind. For, however attached to individuals of extensive influence, and however ambitious of exalted patronage, he was neither an instrument of party nor a server of the time. What he gave in attention he received back in kindness; and, while he associated with the learned and the philosophical, he contributed his share to the general stock of enjoyment. Of Dr Johnson's sincere attachment to him there are many and unequivocal proofs in their correspondence.

But it is not on account of his private character, or of a certain domestic celebrity which he enjoyed during his life, that he is to be distinguished in a work of this kind. We commemorate him as an author, and particularly as a writer of biography. Here he is almost an inventor; he has at least carried this species of composition to a degree of accuracy and detail formerly unattempted. Other writers, as the Abbé de Sade in his *Memoirs of Petrarch*, and Mason in his *Life of Gray*, had conducted the course of their narratives partly by means of original letters. But Mr Boswell has, more than any preceding biographer, made use of all the varied means by which such a history admits of being dramatized. He paints the whole man, presents the incidents of his life in their actual order of succession, and preserves him as it were entire; fulfilling in the history of the moral, what Bacon has assigned to philosophy as her genuine work in that of the natural world, faithfully to return its accents and reflect its image, not to add any thing of her own, but to iterate only and repeat.

The plan of keeping a Miscellaneous Journal had been recommended to him by Dr Johnson on their first acquaintance; and he appears very early to have followed it, as far as writing down what was remarkable in the conversation of those whom he admired. From his frequent allusions to the discourses of Selden, commonly called his *Table Talk*, as preserved by Lilward, it is probable that he had the example of that work in his view; and by long use he acquired a great facility in this process. Of his first publication, containing an account of Corsica, the

Journal of his residence with General Paoli is by far the most interesting part. It is a sketch remarkable for life and natural colouring; and is one of those productions which, though enhanced by their occasion, do not depend on this circumstance alone for the attraction which they possess. In his *Journal of a Tour to the Hebrides*, he pushed to a still greater extent, and even beyond its just limits, his favourite style of writing. Carried away by his natural enthusiasm, and delighting "to pour out all himself, like old Montaigne," he indulged in a more ample and unqualified disclosure, both of his own sentiments and of the opinions of others, than is consistent with a salutary prudence, or necessary for the purposes of instruction. Of this he himself became sensible on cooler reflection, and not only acknowledged it with candour, but, in his subsequent and more laboured compositions, profited by the general opinion, and imposed a greater restraint upon his pen.

For the task of writing Johnson's life he was in many respects peculiarly qualified. He had lived in habits of intimacy with the sage for a period of twenty years, had early conceived the plan of such a work, and received from Johnson himself, to whom his intention was known, many particulars of his early life and personal history. As the writer was thus furnished for his undertaking, so there has seldom been a more fertile or interesting subject for the biographer. Johnson was not a mere scholar, "deep versed in books, and shallow in himself," nor was he one of those unprofitable misers who hoard without expending. He was a general and a minute observer, and, while he possessed in a degree seldom equalled "the strenuous use of profitable thought," his talent for communicating knowledge was more remarkable even than the large capacity of his mind, or the accumulation of his learning.

According to Baker's character of King James, in that passage which Mr Boswell happily prefixed to his *Journal*, "he was of an admirable pregnancy of wit, and that pregnancy much improved by continual study from his childhood, by which he had gotten such a promptness in expressing his mind, that his extemporal speeches were little inferior to his premeditated writings. Many, no doubt, had read as much, and perhaps more than he, but scarce ever any concocted his reading into judgment as he did." Johnson's conversation, accordingly, is the matter and substance of the book; and, as the philosopher did not, in the midst of his studies, forget to cultivate his friends, nor gave up the advantages and comfort of society, there was in his discourse a range and diversity of subject not often found in combination with classical knowledge and habits of profound thinking. Nor does this work exhibit a series merely of witty and sententious sayings: it is interspersed alike with miscellaneous narrative and criticism; and, which constitutes its principal feature, it contains a mass of opinions on subjects of a more common nature, where the powers of reasoning and illustration are applied to familiar topics, and the ordinary occurrences of life. Valuable as a deposit of literary anecdote, it is still more so as a collection of ethical discourses, to which its popular form gives a singular currency and effect; so that there are few books extant where the religious and social duties, as well as the love of science, in its largest acceptation, are impressed more agreeably, or with greater force, upon the mind.

Among the many circumstances which have conspired to heighten our interest in this narrative, is the exhibition which it affords of illustrious characters in different

Boswell,
James.

¹ "Egotism and vanity," says he, in his Letter published in 1785, "are the indigenous plants of my mind: they distinguish it. I may prune their luxuriance, but I must not entirely clear it of them: for then I should be no longer as I am and perhaps there might be something not so good."

Boswell,
James.

walks of life. The period was distinguished by an unusual measure of genius and talent; and we are not only introduced to the closet of the philosopher, but carried with him also into assemblages of the brilliant and the wise, with whom he associated. The tone of this society, moreover, is highly pleasing; and in harmony with our best principles and feelings; in which respect it is impossible to avoid contrasting it with those more boasted Parisian societies during the same period, which were supposed to be the centre of French literature and wit, as they are displayed to us by some of the chief actors in that scene.¹ Mr Boswell's work has not yet, indeed, acquired all its interest; the period is still too recent; but, to estimate its value in after-times, we have only to consider what we ourselves should have gained if such a volume had been preserved to us from the rolls of ancient life.

In the great attainments of a biographer, which are the truth and minuteness of his relation, Mr Boswell has been eminently successful. If, in this species of writing, an author is exempted from the formality, as well as comprehensive research, necessary in the higher classes of historical composition, it is well known that he has his peculiar difficulties to encounter; difficulties, too, which are the greatest where, by his intimate knowledge of the subject, he is best qualified for the task of writing. Nor does the partiality to which he is himself exposed constitute his only danger; since he is no less apt to be led away by the expectation of gratifying his readers. We are fond of seeing the picture of character completed according to our fancy, and, whatever be the feeling which has commenced, we are impatient of any interruption to its train. In the case of those whom we respect and love, the disappointment is doubly ungrateful; we dislike being told of their frailties, because we are unwilling to believe that they were fail. But such is not the colour nor the tissue of human characters; and the artist who would represent them truly, must do perpetual violence to his inclination. The fidelity of Mr Boswell's portrait may be ascribed, in a great measure, to the form and method of his composition. Had he given us only the results of his observation, the effort at impartiality could scarcely have been preserved; but he has presented us with the whole materials as he found them, and allows us to work them up for ourselves.

In the other distinguishing quality of a biographical work, namely, the minuteness of its information, he is so little deficient, that his observance of this requisite has been converted into an accusation against him. And it is certain, as already observed, that, in his early productions particularly, he left some room for such a charge; and that, while his veracity and candour were unimpeached, his prudence was not on all occasions equally conspicuous. Yet it must be remembered that the great use of biography is to bring instruction home; to give us examples, not of individual actions and conduct merely, but of that conduct as displayed in the common paths of life. The history of nations is too often a species of heroic romance. Its lessons are, at all events, of a different nature from those now in question; and its moral is far too remote to answer the necessities of individuals. General precepts, again, when delivered without the aid of story, commonly fail to produce their effect, either because they fail to excite attention, or because the power of applying them to particular cases remains as difficult as before. Nor do works of fiction, however excellent, and even where the scene is laid as it were at home, and the characters are those of a private station, leave any very permanent impressions on the mind. They do not carry with them a sufficient pre-

sence and authority; for the writer's first object is not to instruct, but to please; and, above all, they want that great requisite, truth, for which, in the time of need, all others are abandoned and forgotten. A manual of instruction for human conduct, which, instead of being couched in general maxims, or calculated for situations of unusual occurrence, should descend to particular cases, and to the ordinary emergencies of private life, would certainly be one of the most valuable presents which philosophy could offer to the bulk of mankind. Biography makes the nearest approach towards the compilation of such a code; and, as a commentary on moral duties, it is, when faithfully executed, invaluable. But it is so in proportion only to the closeness of the resemblance and the exactness of the detail. Minuteness, therefore, is the characteristic and soul of biographical writing, if its proper uses are considered.

That such a plan of delineation may be carried to excess, indeed, is undeniable. He who is accustomed to set down whatever he sees and hears, may become indiscriminate in his choice, and forget the value of his store in the pleasure of collecting it. To ascertain the just medium in this respect, is one of the many things for which rules are ineffectual. A sound judgment alone can determine the limits. As to the license of publication, the biographer is under one common restraint with authors of every class. He violates the due boundary if he introduces into his work what is injurious to virtue, or if he discloses, for the purposes of general information merely, any thing which may probably affect the interests or wound the minds of the living. When that period has arrived which secures against dangers of the latter description, even individual characters become, to a certain extent, the property of mankind at large, and may be employed as a vehicle for instruction, if exhibited with fidelity. On this score Mr Boswell, notwithstanding his natural promptness and want of reserve, has, in his latest and principal work at least, given little ground for animadversion. His habitual quickness of feeling and liveliness of fancy appear to have been corrected, where others were concerned, by his love of justice, and a general benevolence of mind.

With regard to his style of writing, a progressive improvement in it may be discovered through his different productions. It is in general well suited to his matter, is animated and easy where he is himself the narrator, and bears evident marks of being true to the original, where, as commonly happens, he is a reporter merely. On the whole, whatever blemishes may be found in it as a literary composition, his *Life of Johnson* is a very valuable work, fraught with information at once useful and pleasing. There are few books which present learning in a more attractive form; and few where the seeds of knowledge are scattered more profusely.

See the *Gentleman's Magazine*; Chalmers's edition of the *Biographical Dictionary*, 1812; and the writings of Mr Boswell, *passim*. (o. o.)

BOSWORTH-MARKET, a market-town in the hundred of Sparkenhoe, in the county of Leicester, 107 miles from London. Near it is the celebrated field of the battle between Richard III. and Henry VII., then Duke of Richmond, by which the crown of England was transferred to the latter. The market is held on a Wednesday. The inhabitants amounted in 1801 to 791, in 1811 to 954, and in 1821 to 1117.

BOTAL or BOTALLI, LEONARD, physician to the duke of Alençon, and to Henry III., was born at Asti in Piedmont. He published several books in physic and surgery; and the best edition of his works is that of Leyden, in 1660, octavo, published by Van Hoorne.

Boswell,
James
||
Botal.

¹ Particularly in the *Correspondence of the Baron de Grimm*, and the *Memoirs of Marmontel*.

BOTANY.

General
Observations.

LINNÆUS divides all natural objects into three grand classes, which he calls kingdoms; and the sciences which treat of these are zoology, botany, and mineralogy. Botany, with which we are to be occupied in this place, enables us to distinguish, arrange, and name all plants or vegetables.

Some years ago, Baron Humboldt made a calculation as to the probable number of the different species of plants existing on the face of our globe. Of late, however, owing to the many novelties that have reached us from Brazil and the East Indies, it has been supposed that his estimate is much under the truth. At least sixty or seventy thousand, described or undescribed, are scattered through different collections, and every day brings to light additional species; so that at present the probable number of vegetable productions may not be too highly estimated at nearly a hundred thousand. To obtain a knowledge of every one of these individually, and without relation to any other, would be a Herculean task, for which the utmost extension of human life might not be sufficient, and which, though procured, could not be imparted to others. The study would thus be selfish, and the labours of a lifetime useless. Valuable medical properties might be observed in some one vegetable; but posterity would, in all probability, find similar properties in another plant, much sooner than re-discover that formerly known. Thus many plants whose medical qualities were highly esteemed by our ancestors, are now entirely unknown to us as possessing such. To remedy these evils, means must be resorted to for the classifying or arranging of vegetables. If we divide them into trees, shrubs, herbaceous, biennial, and annual, we shall have five divisions; so that supposing an equal number to each, we shall have only to look into one of those sections for what we are in quest of. Again, each of these may be subdivided according to the height to which the plant grows, the colour of its flower, or its capability of bearing an esculent fruit. But this is one of the rudest systems, and, though used in the earliest state of the science, was soon found to be subject to great variation, and to want the necessary precision. Other more philosophical divisions were afterwards adopted, to which, and the steps requisite for the knowledge of them, we intend to devote this article.

The necessity of a classification being once admitted, resemblances between individuals, not before observed, could not long escape the attention. Thus the affinities *inter se* of the different species of pine, of the ash, of the lime, of the strawberry, or of the rose, must soon have been admitted; and in framing a system, care would be taken to place these by the side of the allied species, whether in appearance or in qualities. This is what is termed arranging plants according to their species. It would likewise be soon observed that small groups of these species had more affinity between themselves than with other groups;—a general idea would thus be attached to each of these, which would now form a genus;—and when these genera were placed one after the other according to some property or resemblance real or fancied, we should have the arrangement of plants by their genera. Whether, then, we proceed by making grand primary cuts or divisions among all the known vegetables, and then proceed to subdivide these until we arrive at genera and species; or commence by the grouping of species and genera, and mount upwards, we shall attain the means of more readily distinguishing and naming plants, and consequently of imparting to others the result of our observations on their properties and uses.

The *cui bono* in botany is a question that has often been

asked by those who conceive that mere classification is the ultimate object of botany; but, from what has already been said, we trust it will be seen that classification is only the necessary consequence of a wish to impart our ideas to others. It is a universal language, without which the observations of one can be of no use to another, but by which the instructed can unfold to each other, at the remotest parts of the earth, what species or genera of plants have been discovered to possess remarkable properties. "The standing objection to botany," says the eloquent author of the *Natural History of Selbourne*, "has always been, that it is a pursuit that amuses the fancy and exercises the memory, without improving the mind, or advancing any real knowledge; and where the science is carried no farther than a mere systematic classification, the charge is but too true. But the botanist who is desirous of wiping off this aspersion should be by no means content with a mere list of names; he should study plants philosophically,—should investigate the laws of vegetation,—should examine the powers and virtues of efficacious herbs,—should promote their cultivation, and graft the gardener, the planter, and the husbandman, on the phytologist: not that system is by any means to be thrown aside,—without system, the field of nature would be a pathless wilderness; but system should be subservient to, not the main object of, our pursuit." Nor ought an objection to be urged against the pursuit of those parts of botany from which hitherto no immediate use has been derived. From the highest organized plant to the lowest, all form a chain, in which a link lost or broken disconnects the whole, and to which the recent addition of new links, in the shape of new species, has tended much to the increase of our knowledge. What anatomist has not derived delight from the examination of the eye of a fly; and what botanist has not obtained information from the meanest weed! But it is even important to attend to the lowest class of vegetables. The lichens furnish many valuable dyes; the algæ afford food or medicine; and we are all so alarmed at the poisonous effects of many fungi, that scarcely above two or three species are eaten in this country, whereas, if attention were paid to their botanical character, several far superior in flavour to the common mushrooms might be made use of with perfect safety.

The definition of botany here adopted, though easily understood and perfectly correct, is sometimes of little value to the practical man. Between mineralogy and the two other sciences of zoology and botany we believe there can be little confusion; but between zoology and botany, in the subjects belonging to both of which the living principle seems equally to exist, not only are there great points of resemblance, but instances occur in which it is nearly impossible for the eye to determine whether what we see belongs to the one or to the other kingdom.

The distinction made by Linnæus between plants and animals consisted principally in the power of motion in the latter. Many animals have, however, now been discovered, which seem to be unable to remove themselves from the spot on which they first made their appearance; and, on the other hand, there are many plants, as the duckweed (*Lemna*), ball-conferva (*Conferva agagropila*), and others, which, if they have roots, do not send them into the earth, but float about as if in search of food; and our distinguished countryman Mr Brown, whose philosophical observations all must respect, has within these few years demonstrated that the component particles or molecules

General
Observations.

General
Observations.

of all matter whatever, whether organized or not, when suspended in a fluid, and viewed with a suitable microscope, are found to be in motion without any visible agency. Perhaps the true differences are to be looked for in sensation and an intestinal canal in the animal kingdom, into which the food is collected; whilst plants are endowed only with irritability, and receive the food through many canals or mouths. But this, although it were universally acknowledged, is of little service, as confusion is only likely to arise in the case of the smallest and least organized, and where the correct knowledge of the anatomical structure is attended with almost insuperable difficulties. In many zoophytes, or lower tribes of marine animals, the external horny or calcareous covering so resembles a plant in its mode of ramification, as to cause doubts which are not easily removed; and there consequently exist many natural objects to this day that are claimed by both the zoologist and botanist. This similarity, combined with the motion to be observed in all molecules, has, we think, given rise to the singular delusion under which many celebrated men abroad have for some years past laboured, when they assert that the minute aquatic algæ were animalcules in the first stages of their being, but which afterwards took root and became plants. A rudimentary plant may have often been mistaken for an infusory animal, and may have even been described as such; and although there be no absolute practical character of almost any use to enable us to distinguish the two, yet we consider their identity as a mere matter of speculation, that has never been proved, and which is not borne out by any analogy derived from what are more organized, and on which observations would be less subject to error.

Subservient to the actual classification and determination of plants, and consequently forming branches of the science of botany, are, *1st*, Organography, or the anatomy of plants, or the knowledge of the structure of their parts or organs; *2d*, Physiology, or the knowledge of the functions of these parts; *3d*, Pathology, or the derangements to which these functions are exposed; *4th*, Terminology or Glossology, or a knowledge of the terms employed to designate the parts or organs; *5th*, Phytography, or the art of describing plants, so that every species may be distinguished and recognised; and, *lastly*, Taxonomy, or the art of combining all these in such a way as to produce a systematic arrangement or classification.

What are usually called *medical botany*, *agricultural botany*, and *economical botany*, do not belong to the science of botany, as one might at first suppose from the names, but form respectively mere connecting links between botany and *materia medica*, as well as agriculture and domestic economy. They exhibit the relation existing between vegetables and the arts, and point out the uses to which different plants are applied. But although they therefore must fall under other subjects in this work, a certain knowledge of their general relation must be of considerable use to the botanist, inasmuch as it may enable him to frame a classification that will bring nearer together plants of similar properties and virtues, as well as of a similar form and structure.

In the same way, botanical geography is not a branch of botany. This exhibits the relation between vegetables and the soil on which they grow, and the climate in which they delight, or, in other words, the physical causes, and the laws of their distribution over the surface of our globe. This will form a part of Physical Geography.

Horticulture or gardening, or the art of cultivating plants so as to improve their beauty or ameliorate their qualities, is dependent on vegetable pathology; but it has long been considered as separate from botany, and will be treated of as a distinct science.

The above six branches of botany are so intimately con-

nected, that it is difficult to discuss one without encroaching on the others. As, however, these are discussed in other parts of this work, we shall here confine ourselves, as much as the nature of the subject will admit, to the three latter;—Glossology, Phytography, and Taxonomy; under which last will be found a short historical sketch of the science.

Glossology.
Pl. CXII.

I.—GLOSSOLOGY.

Glossology, or, as Linnæus called it, Terminology, gives us, as has already been stated, the knowledge of the terms employed, or furnishes definitions of the names applied to the different parts or organs. The structure of these constitutes organography or anatomy. An account of the organs themselves belongs also, strictly speaking, to the same branch of the subject; but as a mere explanation of terms might prove useless and uninteresting, without understanding to what these terms are to be applied, we shall here exclude the elementary organs, or those which compose the others, and blend the two together; and thus, by explaining the organs and their successive developments, endeavour to lay a foundation, without which a knowledge of the natural system of classification cannot be acquired. Under *VEGETABLE ANATOMY*, these organs are treated of as subservient to physiology. Here we shall consider them as connected with classification. And as in this article we do not intend to insert a catalogue or description of plants, so we shall pass over many terms that are not essential to a general view of the subject.

The organs of plants not elementary have been divided by De Candolle into the fundamental and reproductive. The former are such as are essential to the nutrition of the plant, while the latter are mere modifications of these. We shall therefore first proceed to the

FUNDAMENTAL ORGANS.

These consist of roots, stems, and leaves.

Roots (Radices).

We shall suppose a seed put into the ground under favourable circumstances. The inherent vital principle common to both plants and animals begins to operate; and a development takes place downwards as well as upwards. The descending portion is termed the Root; and by it plants are fixed to the earth, and nutriment absorbed. In some aquatic plants no root whatever is perceptible. But in such apparent aberrations from what seems a general rule of nature, it may be presumed by analogy that roots do exist even when they have not been observed; in confirmation of which it may be stated, that many plants to which roots were long denied, have actually possessed them in some parts of their existence, and are capable of deriving nourishment either from the earth, water, or air, although in a few the foliaceous portions of the plant are such as almost to preclude the necessity of their having any.

There are several characters which distinguish the root from the stem. The principal are the absence of leaves, of pith even in those plants in which it is abundant in the stem, and of spiral vessels.

A root usually consists of three parts: the *neck (collum)*, or line of separation from the stem; the *body* or middle portion of the root; and the attenuated fibrous portion, or little roots through which the nourishment is principally derived. Keeping this in view, a root of the simplest kind is, *1st*, what is termed *conical*, or the principal or tap root as it is sometimes called; this tapers downwards, emitting fibres from various parts of its surface, as in the carrot (Plate CXII. fig. 1): *2d*, when the conical root is attenuated

Glossology. towards the neck, as well as below, it is called *fusiform* (fig. 2), as the radish: 3d, when swollen out extremely in the upper part, and suddenly attenuated below, it is *napiform* (fig. 3), as in the turnip: 4th, when the fusiform root is as it were cut off suddenly, it is termed *abrupt* (*præmorsus*) (fig. 4), as in the devil's bit scabious: 5th, *fibrous* when the body of the root is so reduced as not to be apparent, and nothing is seen but simple or branched fibres proceeding from the neck: 6th, when these fibres swell out slightly in the middle, the root is called *fasciculated* (fig. 5): 7th, when the fibrous root bears, either at its neck, or here and there attached to its fibres, one or more tubers, fleshy, and containing much starchy feculent matter, it has been often called *tuberous*, but ought really to be termed *tuberiferous*, such tubers serving for the nourishment of the plant; when two of such tubers are placed together, as in some species of orchis, they are said to be *didymous* (fig. 6); and when these again are divided up to the middle into diverging lobes, they are *didymous palmate* (fig. 7). Some give the name of tuberous roots to any root whatever that contains swellings or tubercles on some part of its length; but in neither sense ought tubers to be classed among roots. In the one they are more properly short, fleshy, subterranean stems, containing usually eyes or buds, from which new plants arise; and in the other they have a very different structure, and are generally termed, 8th, *granulated* roots. These exhibit a collection of small tubercles with eyes fit for the reproduction of the plant, without being enveloped by cellular tissue filled with starchy fecule, and thus differ essentially from the tuberiferous. In the same predicament with the tuberiferous is the *bulbous* root (fig. 8). This consists of a thin, flat tubercle, called by cultivators of hyacinths the crown, from the lower part of which proceeds a fibrous root, while above there is a bulb or peculiar kind of bud, formed of a number of scales (as in the lily), or coats (as in the onion), closely applied to each other; such may rather be termed *bulbiferous* roots, the bulb being equivalent to a leaf-bud, and the crown to a stem.

With regard to direction, there are only two requiring any notice. The one is *contorted*, when bent upwards and downwards in a zig-zag manner, as may be seen in the bistort; the other is a *creeping* root. The usual direction for a root is towards the centre of the earth, but it sometimes happens that one or all of its parts deviate at a right angle from this, and proceed laterally parallel to the surface. When this takes place it is said to be *creeping*. Roots of this kind are said to be among the greatest enemies the agriculturist has to encounter; but they are in a measure harmless, much confusion prevailing between them and subterranean branches; and we would therefore warn the young botanist not to fall into the error. Indeed the number of creeping roots is much less than has been generally thought; for in most cases these will be found to be true branches springing off from the stem above the neck of the root, but afterwards developed under ground, and even from different points throwing out radical fibres. Among these is the couchgrass (*Triticum repens*), and the potato, the fibrous parts of which bearing the tubers are now ascertained to be branches, as might indeed have been long ago suspected, from the care found necessary by cultivators to be paid to the heaping up of the earth on the lower part of the stem, so as to increase the number of these branches, and render the crop more abundant. In some plants, as in *Vicia amphicarpa*, such branches or false roots bear pods under ground.

Stems (Caules).

Reverting to the germination of a seed, that part which springs upwards is the stem: it is therefore the interme-

diate body between the root and the leaves. When the first state of germination is observed, the rising stem is surrounded by rudimentary leaves. It is thus similar to those gems or leaf-buds that are afterwards observed in the axillæ of all leaves, and which afterwards become branches; and it may therefore be stated in general terms, that all stems are produced by the successive developments of leaf-buds.

When the stem of a plant arising from a seed is evident, the plant is termed *caulescent*; and when not apparent, or scarcely so, the plants have received the names of *acaules* or *subacaules*. These last terms, however, must not be taken in a rigorous sense; for although a stem be sometimes extremely short, or even entirely under ground, it always exists. We may refer here to *Gentiana acaulis*, *Carduus acaulis*, and many others, said to have no stem, but which really have one so surrounded by the bases of the leaves, as to be overlooked until they be planted in a more genial soil, when the stem becomes more visible. We have already stated that the crown of what is called a bulbous root is the real stem;—and in the genus *Cyclamen*, what is usually considered a tuber is an actual stem, from the base of which fibrous roots are protruded, and from the top, leaves and flowers.

It often happens that the stem, instead of ascending, stretches, either wholly or in part, under ground or on the surface, emitting here and there roots from below, and branches or leaves which rise upwards. Such a stem is called a *rhizoma* (fig. 9), or, if it do not emit fibres, a *cor-mus*. Most of what Linnæus improperly described as creeping roots are of the former description: of these each rising branch may easily be separated, and becomes a new individual. The jointed roots or scaly roots of botanists are also subterranean stems; for the knots and scales are the rudiments of buds and leaves, which no true root possesses. Sometimes a plant pushes out horizontally long stems of a peculiar nature, emitting only from the extremity roots and leaf-buds, as in the strawberry. Such stems are termed *stolones* or *runners*.

Branches as well as stems arise from leaf-buds. Every leaf or modification of a leaf possesses these in their axillæ, or the angle formed by the leaf and the branch; and therefore all leafy stems must likewise be branched, and without any limit to the ramification, unless the leaf-bud has met with injury, or in peculiar circumstances has not been called into action. As leaf-buds are axillary, so branches are not elongated, strictly speaking, by means of leaf-buds, but by a prolongation of the axis of the original leaf-bud from which it arose. This distinction is, however, very subtle and unnecessary; for the terminal scaly bud, though only the undeveloped portion of a leaf-bud, is so similar to regular leaf-buds in the external as well as internal structure, that they cannot be distinguished but by their position. De Candolle indeed calls them all leaf-buds, and we ourselves feel inclined to admit the idea of a terminal leaf-bud; but, while we do so, we must add, that from the terminal being really only a portion of an axillary one, it must be viewed as a modification of the axillary; and therefore, although appearances be sometimes against us, we must again repeat that all leaf-buds are axillary. Spurious leaf-buds, or *gemmæ* as they are called, sometimes capable of producing branches and leaves, or even new individuals, are frequently scattered irregularly on the stem or branches, as, for example, on the elm, where they are abundant; but these must not be confounded with true leaf-buds. The leaf-buds, the development of which depends on the rise of the sap, have the outer or lower scales or leaves first expanded; and this same law ought to hold with regard also to their successive development. And such is the case in some trees. But the extremities of the branches

Glossology. being almost always more herbaceous than below, and more liable to be acted upon by atmospherical heat, the buds towards the summits are usually first evolved, and then, proceeding gradually downwards, those below them, so that the lowest buds are the last expanded.

The summit of branches or stems is usually green, soft, and herbaceous; and when the primary stems do not rise above the surface, but only the tender branches, that plant is termed *herbaceous*, in opposition to those with a *perennial* stem. An herbaceous stem generally dies down to the ground every year. A perennial stem may be *succulent* or *fleshy*, *woody*, *shrubby*, or *somewhat shrubby*; but these terms bear their own meaning. Linnæus devised for expressing the duration of plants four very simple marks, which have been adopted by nearly all botanists. These are, $\odot$, to denote annual; $\mathfrak{z}$, biennial; and $\mathfrak{z}$, perennial; while $\frac{1}{2}$ indicates a shrub or tree. De Candolle, however, has somewhat changed these and added others. He adopts four principal signs, $\odot$, $\mathfrak{z}$, $\mathfrak{z}$, and $\cup$. The first relates to a plant called monocarpic, or which flowers and fructifies only once; the second denotes a rhizocarpic plant, which has herbaceous stems that die down to the ground every year; the third applies to a caulocarpic one, whose stems are straight and perennial; and the last marks a climbing plant. The first, third, and fourth of these, being indefinite, are divisible into several others: Thus, $\odot$, shows the life of the plant is only for one year; $\odot$, for two years; $\odot$, that it is many years before it flowers, but after which it dies. Again, $\mathfrak{z}$, indicates a suffruticose plant, or one that though shrubby does not elevate itself more than a foot or two; $\mathfrak{z}$, denotes a shrub of from two to ten feet high, in which the branches arise from the base of the stem; $\mathfrak{z}$, marks a small tree of from ten to twenty-five feet high, and whose trunk is without branches at the base; and $\mathfrak{z}$, is a decided tree upwards of twenty-five feet. As to the symbol for climbing, $\cup$ marks a plant that climbs to the right, and $\cup$ one that climbs to the left. To these the same botanist has added $\triangle$, to point out an evergreen.¹

On examining the trunk or branch of an ash or oak tree, we perceive in the centre a mass of spongy cellular tissue,² called *pith*. Around this, and inside of the wood, are placed a series of spiral vessels and ducts, constituting the *medullary sheath*. This communicates on the one side with the pith, and on the other with the medullary rays, leaf-buds, and veins of the leaves. Next we find the *wood*, consisting of concentric layers, one of which is formed every year. These layers are composed of cellular tissue, woody fibre, and ducts, and are traversed by the medullary rays composed of cellular tissue, and connecting the centre with the circumference. The fully formed or central layers are called the *heart-wood*, and the exterior the *alburnum*. The *bark* surrounds the wood. This may be seen to have the same number of concentric layers as the wood, but of these the hardest or most fully formed is exterior, and the youngest interior. The *liber* is that portion of the bark which is successively formed next the wood. Each concentric layer, whether of wood or bark, consists of two strata, the one of woody fibre and ducts, the other

Glossology. of cellular tissue, of which the latter in the wood is interior, and in the bark exterior; so that wood and bark may be viewed as similarly constituted of woody fibre and pith; which last, however, in the bark, is on the outside. Betwixt the liber and alburnum is formed in spring a viscid secretion called *cambium*. The matter which causes such plants to increase in diameter has been found by experiment to descend; but the investigation of this subject belongs more to vegetable anatomy and physiology. Suffice it to say, that such an appearance as we have above described takes place in a very great proportion of vegetables; and from the circumstance of their receiving the annual increase between the outside of the old wood and inside of the old bark, some botanists have termed such plants *Exogenous* (*Exogenæ*). There are other plants, however, in which no such distinctions exist, and where the stem is formed of bundles of ducts and spiral vessels interspersed through a cellular tissue; and this is surrounded by a stratum of cellular tissue and woody fibre, different from bark, inasmuch as it cannot be separated from the stem itself. Such plants have their diameter increased by the addition of central vascular tissue and ducts, and are therefore called *Endogenous* (*Endogenæ*). Both *Exogenæ* and *Endogenæ* containing spiral vessels, are called *vascular*, in opposition to another division of vegetables, the *cellular* (*cellulares*), in which they do not exist; but as these plants do not spring from seeds, we shall pass them over at present.

Occasionally, projections from the medullary sheath reach the circumference of the stem and branches, forming what are called *nodi*, to which are attached leaves and leaf-buds; and the spaces between these *nodi* are called *internodia*. The tuber of the potato seems to be a collection of these *nodi* and leaf-buds (there called eyes), the leaves being abortive from the tubers being formed under ground.

The stem peculiar to the grasses and other allied tribes is termed a *culm* (*culmus*). This is simple, or rarely branched, generally hollow within or fistulose, and separated at intervals by knots or partitions, from which issue the leaves.

The stem may be *simple* or *branched*, and with the branches may be *cylindrical* or *conical*; *round* (*teres*) or *angled*; *smooth* (*lævis*), *furrowed*, *glabrous* (free from any processes), or *rough*, or *pubescent*, or *hairy*. These terms, bearing the same signification in botany as in common language, need no definition. Among *Endogenous* plants, from the abortion of leaf-buds, the stems are usually cylindrical and unbranched; while, from the leaf-buds being almost always developed in the *Exogenæ*, the stems are generally branched and conical.

Belonging to the stem we may take notice of two processes. The one is a *spine* (*spina*), which always arises from what was a leaf-bud; it is therefore a kind of branch, and must not be confounded with the other process, or *prickle* (*aculeus*), which does not spring from leaf-buds, and is a mere dilatation of the cellular portion of the bark.

Leaves (Folia).

Leaves are those expansions which issue laterally from the stem and branches of plants. They take their origin

¹ The Linnæan character $\mathfrak{z}$ has been employed by De Candolle to mark a flower or a plant that bears stamens and no pistils; and, to correspond with it, he has recommended the adoption of $\mathfrak{z}$ for a plant with pistilla and no stamens; $\mathfrak{z}$, according to him, designates a plant which has flowers containing both.

² To save our readers the trouble of referring at every step to the article on VEGETABLE ANATOMY, we shall give here an explanation of the principal elementary organs:

1. *Cellular tissue*, or *parenchyma*, is composed of transparent vesicles, variously cohering with each other.
2. *Woody fibre* is a tissue consisting of elongated tubes, similar to the vesicles of cellular tissue, and is therefore often also called *elongated cellular tissue*.
3. *Spiral vessels* are formed of elastic tissue, twisted spirally into the form of a cylinder, and capable of being unrolled. To these alone the name vessels (*vasa*) ought to be given; and hence they are always to be found in the vascular tissue of plants properly so called.
4. *Ducts* are elongated, transparent tubes, composed of a tissue that is not capable of unrolling.

Glossology. from the bark, and are always to be observed, either in a rudimentary or perfect state, immediately below the leaf-buds. They are originally continuous with the stem and nodi, but afterwards, from a cause that does not appear to be yet well understood, an articulation more or less complete takes place, when the leaf falls off. Very few instances occur where there are no leaves on the stem, as in the genera *Orobanchæ*, *Lathræa*, and *Cuscuta*, and even then there are rudimentary leaves in the shape of scales or tubercles.

Position of the leaves. The first thing we have to attend to is the position of the leaves. Those situated near the root are often larger, and of a different shape, from those higher up the stem; and the former are termed *radical*, the latter *cauline* leaves. We usually observe, that as these approach the extremity of the branches which bear the flower, they decrease much in size, assume a different form and colour, and are termed *floral leaves* or *bractæas*. Of these we shall afterwards have occasion to speak, when we come to the inflorescence of plants.

When the stem or branch is cut through, several leaves are sometimes found in the same horizontal plane. When only two are observed, and these opposite to each other, they are usually said to be *opposite*. It has, however, been lately proposed to term opposite those only, the bases of whose petioles are connected either by stipules or otherwise, reserving to the others the appellation of *pseudo-opposite*; but this distinction has been hitherto adopted by almost no systematic writer. When more than two are in the same plane, they are said to be in *whorls*, or *verticillate*; but, strictly speaking, such are of very rare occurrence; *Hippuris* and *Myriophyllum* may however serve as examples. But it is improper to apply this term to the leaves of the genus *Galium*, in which the two opposite leaves alone bear axillary leaf-buds, the others being mere foliaceous stipules.

When the branch is cut through horizontally, and only one leaf appears in the section, the leaves were said by Linnæus to be *scattered* (*sparsa*), or *alternate*, with little discrimination. More modern botanists have, however, observed that these are primarily arranged regularly; but afterwards so many disturbing causes occur as to render their true disposition scarcely perceptible. By true alternate leaves ought to be understood those only which are placed on two sides of the branch, in such a way that the third leaf is under the first, and the fourth under the second; and when such are close together they are said to be *distichous*. But leaves are usually placed in simple spirals, in such a way that the sixth is under the first, the seventh under the second, and so on. There are also instances where the spiral is formed of more than five leaves, and hence there may be double, triple, quintuple, or sextuple spirals. The practice, however, still prevails of calling all such alternate in which the spiral is not very evident.

Of these two systems the type of the verticillate is the opposite, while that of the spiral is the alternate; and cases even happen where the one of these seems almost to pass into the other. Thus, in Exogenous plants, although the leaves may be opposite to each other on the lower part of the plant, they often assume the spiral direction above; and, in the Endogenæ, although the lower leaves be in a spiral, the upper ones are sometimes verticillate. This induced Desfontaines to institute a close analysis, by which he discovered a remarkable relation between the structure of the stem, the number of cotyledons, and the disposition of the leaves, from which we are now enabled to derive a general law, that in all Dicotyledonous or Exogenous vegetables, the leaves are primarily opposite, or verticillate, but may become alternate, or form a spiral, according to the mode of growth of the plant; and that in all the Monocotyledonous, or Endogenæ, the reverse happens, the

leaves being primarily alternate, or in a spiral, but afterwards subject to be more or less exactly opposite. Thus, in the position of the leaves we have an auxiliary to enable us to determine to which of these two great classes of vegetables a plant belongs.

Some botanists add to the above *fascicled* leaves (*folia fasciculata*); but these are combinations of which both systems are susceptible. Thus, in *Aspalathus*, where the three leaflets appear to arise from one point, this is a deception caused by the shortness of the petiole. Another case commonly quoted is, when the leaf becomes abortive at the same time that a very short branch furnished with leaves appears from the leaf-bud. Thus, in the barberry, the thorn is the rudiment of the real leaf; and what we call leaves are new leaves placed close together on a very short branch, and belonging to the leaf-bud. In the pine tribe the sheath is the rudiment of the leaf; while the two, three, or five leaves within it are the first leaves of an abortive branch. The cedar exhibits and explains this very easily; for in the early part of spring, the leaves are fasciculated; but in summer, when the leaf-buds or axillary branches have time to elongate, the leaves become alternate.

A leaf consists of the petiole, the lamina or limb, and a Petiole. pair of stipules; but sometimes only one of these three parts can be observed. The *petiole* is that which connects the lamina with the stem, and through it the bundles of ducts and spiral vessels pass before they branch out in the limb. Its form is usually cylindrical or slightly channelled above; but it sometimes happens that it is flattened, and presents on each side a foliaceous appendage, when it is said to be margined, as in *Dionæa muscipula* (fig. 41, b). This margin is frequently contracted at regular intervals; and from each contraction in a compound leaf springs a leaflet. We often find, however, that the leaflets are abortive, in which case the petiole may easily be mistaken for the lamina; and this is indeed what is called by some a lomentaceous leaf. But more commonly a terminal leaflet remains, although the others be abortive, as we see in the orange tree; and to distinguish the two kinds we must be much guided by analogy. This confusion is however of little consequence; for as we may regard the longitudinal nerve of the leaf as a prolongation of the petiole, the limb or lamina itself may be viewed as a margined petiole.

The fibres that pass through the petiole, and which in Exogenous plants arise from the medullary sheath, and in the Endogenous from the bundles of vascular tissue, sometimes in the former class, instead of being united from the base into a compact bundle, as more commonly happens, spring side by side from various points more or less round the branch. The base of the petiole is thus plane, and is *amplexicaul* or *semi-amplexicaul*, or perhaps even *sheathing* (*vaginans*). Before the fibres enter the lamina, however, they tend to one point, so that the upper portion does not differ from a common petiole with a rounded base. This expansion of the base of the petiole is to be seen in a remarkable manner in the upper leaves of *Bupleurum perfoliatum* and some others, where it has all the appearance of a foliaceous limb.

Towards the summit of the stems of the *Umbellifera*, the lamina and the cylindrical part of the petiole frequently disappear, nothing remaining but the sheathing base. In *Lathyrus Nissolia* this happens to all the leaves, and there the sheathing base becomes more dilated than usual. The affinity derived from other considerations between *Pyrola* and *Monotropa* shows that the scales of the latter are petiolar sheaths, and in the *Orobanchæ* tribe they must be viewed in the same manner.

It happens sometimes, especially when the lamina is not developed, that the petiole, without being sheathing

Glossology. at the base, expands throughout its whole length, and takes a state intermediate between foliaceous and petiolar. **Pl. CXII.** This has received the name of *phyllodium*; as in many species of *Acacia* from New Holland, some of which when young present a slender petiole and a bipinnate leaf, but afterwards lose their leaflets by the dilatation of the petiole.

Sometimes the petiole is elongated beyond the lamina, or perhaps in compound leaves the terminal leaflet may have no lamina but only the midrib, while the petiole or midrib retains its usual cylindrical figure, becomes very long, twists spirally, and then constitutes a tendril (*cirrhus*) (fig. 37, a). In others, though rarely, the leaves are abortive, and the petiole remains straight and cylindrical. In some plants with compound leaves, as in *Astragalus Tragacantha*, the terminal leaflet becomes abortive or is changed into a spine, when the petiole is said to be spinescent.

Lamina. The *lamina* of the leaf next claims our attention. This is an expansion of the parenchyma of the petiole, and commences where the bundles of vascular tissue that traverse the petiole begin to diverge from each other and form what are called the veins of the leaf. The divergence of these fibres, says De Candolle, is in two different ways. They either separate, making with the base or its prolongation an angle properly so called, and most frequently an acute one, when the leaves may be said to be *angulinerved*; or they form on the base or its prolongation a curvature, when the leaves may be termed *curvinerved*. The former structure is essential to the Exogenæ, the latter to the Endogenæ. Among those, the nerves of which form an angle, there are four forms.

1. Leaves *penninerved* (fig. 14), where the petiole is prolonged into one longitudinal nerve, which on both sides sets out lateral nerves, as in the Spanish chestnut. In a linear leaf these lateral nerves must be all equal in length; in an elliptic, oval; or orbicular leaf, those about the middle must be longer than those at the base or summit of the leaf; in an ovate one, the longer nerves are below the middle; in an obovate leaf, above the middle. When the lower pair or two lower pairs of nerves are much larger than the others, and almost the size of the midrib, as in the Jerusalem artichoke, the leaves are said to be *triplinerved* or *quintuplinerved*.

2. Leaves *palminerved* (fig. 10), where several nerves diverge all at once from the base of the leaf.

3. Leaves *peltinerved* (fig. 11), where several nerves radiate from the apex of the petiole in a plane different from the direction of the petiole. It results from this disposition that the lamina does not appear at first to be a prolongation of the petiole, but rather a disc placed at its summit. It is evident, when the point of attachment is near the margin of the lamina, that we should have almost a palminerved leaf; indeed in some plants these two forms occur promiscuously.

4. Leaves *pedalinerved*, where the central nerve is very short, but setting off on both sides two strong diverging lateral nerves, which, instead of being branched alike on both sides, present almost no lateral nerves on the outer side; whilst, in the inside, secondary nerves spring out almost parallel to each other. This form is of rare occurrence, but may be seen in some passion-flowers.

The curvinerved leaves may either have their nerves converging or diverging; but these require little illustration.

In Exogenous plants the veins branch in various directions, anastomosing, and forming a kind of net-work. In Endogenous plants they are nearly parallel to each other, being connected by single transverse unbranched veins.

To this the *Coniferae* and *Cycadææ* form perhaps the only exceptions: these have the stems of the Exogenous, but the same arrangement of the veins as in the Endogenæ. **Pl. CXII.**

The veins of some leaves are capable of producing from their extremities *gemmae* similar to those we have described as occurring on the stem and branches. These *gemmae* usually arise from the margin; but as the vein must be open, or have a stoma, as it is anatomically called, at the point of insertion; and as such stomata, though frequent on the under side, have been rarely observed on the upper surface; so the *gemmae* are seldom or never produced on the upper side.

A leaf is either simple or compound. It is *simple* when its lamina is entire (*folium integrum*), or when, if separated into several divisions, these segments are not articulated with the petiole. The position and ramification of the nerves have great influence in determining the shape of the leaf. Of those that are entire, the simplest of all forms is the *linear* (fig. 12), where the margins are parallel. By the central position of such a one being slightly dilated, we have an *oblong*; when more dilated, an *elliptical* leaf (fig. 13); and when much so, an *orbicular* one. When the dilatation is below the middle, we have an *ovate* (fig. 14); when above the middle, an *obovate*¹ leaf (fig. 15). When the oblong tapers gradually into a point at the apex, it becomes *lanceolate* (fig. 16). If a leaf be very narrow, and taper upwards from its base, it is *subulate* (fig. 17); and when long, narrow, stiff, and sharp, it is said to be *acicular* or *setaceous* (fig. 18); when narrow and very slender, it is *filiform*. When an elliptical leaf tapers much below, so as to be narrow at the base, and broad and rounded at the summit, it becomes *spathulate* (fig. 19); and when narrow at the base, and truncated or somewhat squared off at the top, it is *cuneiform*. Such are the principal forms. When almost any of these are produced at the base, so as to have two lobes on each side of the petiole, they are said to be *cordate* or *heart-shaped* (fig. 20 and 21) when the lobes are rounded; *sagittate* (fig. 22) when acute and scarcely diverging; and *hastate* (fig. 23) when acute and diverging much outwards. When an orbicular leaf becomes cordate at the base, it is called *reniform* (fig. 24).

Leaves, or rather the lamina of leaves, are either sharp-pointed or *acute*, *pungent*, *mucronate*, or *acuminated*, or they are *blunt* (*folia obtusa*), (fig. 15, 24,); when such a leaf has a small sinus at the apex, it is *retuse* (fig. 25); when the sinus is deeper, as if a piece had been cut out, it is *emarginate* (fig. 26); and when still more so, *obcordate*; till by degrees we have *bifid*, two-lobed (*folia biloba*) (fig. 27), and *bipartite*. What is called the appendage (fig. 41, a) in *Dionæa muscipula* is a two-lobed lamina. From the gradual transition of one form into another, botanists might long ago have learned the little importance to be attached to any individual shape; unhappily, however, for science, species have too often been multiplied on such weak grounds. In studying the phytographical department, we would recommend, that either in describing, or endeavouring to understand a description, each form should be taken with a considerable latitude of meaning, and as subject to vary into the others on either side.

A divided leaf may be *cleft* (*folia trifida, quadrifida, &c.*), or, if the divisions be deeper, it is *lobed* (*folia triloba, &c.*), and, when deeply cut, partite (*folia tripartita, &c.*); but when the divisions are deep and unequal, the leaf is *lacinated* (fig. 28). When a leaf is rounded at both extremities, but contracted in the middle, it is *panduriform* (fig. 29) or violin-shaped; and when there are more than

¹ The terms *ovate* and *obovate*, although generally adopted, are incorrect; they ought to be *oval* and *oboval*. A truly ovate leaf refers to thickness as well as surface. It has indeed the shape of an egg, and oval is the longitudinal section of such.

Glossology. one contraction on each side, as in the oak, it is *sinuated* (fig. 30). When a leaf is divided laterally into lobes more or less deep, it is *pinnatifid* (fig. 31); when these lobes are very narrow and nearly parallel, it is *pectinate*; when the lateral lobes are acute and recurved, it is *runcinate* (fig. 32); when the terminal lobe of a pinnatifid leaf is round and larger than the others, the leaf is *lyrate* (fig. 33); when a leaf is so deeply divided laterally that the lobes are only connected at their base, it is *pinnatipartite*; and when the lobes are completely isolated, it is *pinnatisect* (fig. 34). Linnæus, as well as many modern botanists of eminence, called the last *pinnate*, and referred it to a compound leaf; but the transition from the entire leaf to the pinnatisect shows distinctly that the latter is but a simple leaf, of which all the parenchyma has not been developed.

A divided leaf may have its lobes again divided, when it is said to be *bi* or *tri-pinnatifid*, &c.

A compound leaf is when the lamina is articulated with the petiole. It is either digitate or pinnate. Leaves are *digitate* (fig. 35) when all the leaflets start from the same point at the apex of the petiole, as in the lupines; in the orange there is but one leaflet; in other plants three, four, or more. Leaves are *pinnate* when the leaflets spring out laterally from the common petiole, and are *oppositely* (fig. 36) or *alternately* pinnate, according as these leaflets are opposite to or alternate with each other; and are *imparipinnate* (fig. 36) or *paripinnate* when there is, or is not, a terminal leaflet. When there is but one, two, or three pairs of leaflets, the leaf is said to be *unijugate* (*folium unijugum*), *bijugate*, *trijugate* (fig. 37), &c. A *decompounded* leaf is where the common petiole is divided into secondary petioles, each of which bears a foliole or leaflet. Of these, when the secondary petioles all spring from the apex of the common petiole, the leaf is *digitato-pinnate*; or when there are only two secondary petioles, *conjugato-pinnate* (fig. 38). When each of the secondary petioles bears only one pair of leaflets, the leaf is *bigeminate* (fig. 39); and when the secondary petioles spring out as leaflets do in a pinnate leaf, but are themselves pinnate, the leaf is *bipinnate* (fig. 40). Decompounded leaves may be again divided, when they are called *supradecompounded* (*folia supradecomposita*).

The margin of the divisions of a simple or compound leaf is variously modified. It may be *very entire* (*integerrimum*) or *crenulate*, when furnished with little projecting points; or *dentated*, when the margin presents small radiating acute teeth, that neither incline to the bottom nor to the apex of the leaf (fig. 21); or *serrated* (fig. 14), when the teeth are inclined; or *thorny*, when the teeth are narrow, stiff, and sharp (as in the holly); or *ciliated*, when there is a series of hairs along the edge, like a person's eye-lashes.

With regard to the *expansion*, *surface*, *pubescence*, *consistence*, *form* (we do not mean by this the superficial shape, but the shape as a mass, of which the other is but a section), and *colour*, it is unnecessary to say any thing, having restricted ourselves to a more general view of the subject.

Leaves unite very easily either with each other or with the stem. When two have their margins close together at the time of their development, they often unite quite accidentally; but there are some plants in which such a union is not accidental, but constant. In the honeysuckle a transition may be observed from the leaves perfectly distinct, to those that are joined by their bases. The genus *Bauhinia* presents many instances of leaves being united by their edges: a palminerved leaf may thus be viewed as composed of several penninerved leaves soldered partly together. When leaves unite to the stem they are termed *decurent*; and this may be either caused by the middle

nerve coalescing with the stem, as in the floral leaves of *Glossology* the lime tree, or by the adherence merely of a prolongation of the parenchyma of the leaf. Pl. CXII.

Some botanists speak of an *appendiculate* leaf, in which there ought to be an extraneous body attached to it; but the more the structure of the different parts is studied, the fewer instances are to be recorded. Thus a cirrus or tendril is usually an abortive leaflet, or petiole, or stipule. The supposed appendage of *Dionæa muscipula* (fig. 41, *a*) is the real lamina of the leaf, while the supposed leaf is the petiole (fig. 41, *b*). The pitcher of *Nepenthes* (fig. 42, *a*) is also now regarded as the leaf; and the lower portion (fig. 42, *c*) the petiole, which is partly margined. This plant, however, is scarcely yet completely understood; probably the lid (fig. 42, *b*) to the pitcher alone is the limb of the leaf; while the petiole at first consisting (as in the lower leaves (fig. 43, 44) that arise from the plumule on germination) of a mere pitcher, afterwards elongates (fig. 42, *c*, *a*) into a margined portion, a cirrus, and a pitcher. In *Sarracenia*, said also to have a pitcher-shaped leaf, the petiole forms a hollow sheath with the lamina or lid at its apex.

Stipules (fig. 37, *b*) are those small foliaceous organs sometimes situated on each side at the base of the petiole. They never occur in the *Endogenæ*, nor in any *Exogenous* plants that have sheathing petioles, and are rarely found in genera with opposite leaves. Their presence or absence seems to be eminently connected with the general symmetry of plants, for they exist or are wanting in all of the same family. They have frequently the same structure, and are often transformed into leaves; even leaf-buds have been observed in the axils of some of them, so that they may be viewed as rudimentary leaves. Stipules sometimes change into spines; but the spines in *Acacia* are not stipules, but prolongations of a swelling of the stem under the leaf, which serves it as a kind of support. This is evident from there being frequently real stipules independent of the spines; but usually, when the spines are formed, the stipules above them are abortive. Stipules seem occasionally to change into tendrils, and this is the most probable explanation of the lateral tendrils of the gourd and cucumber tribe. They are in general smaller than the leaves; but in *Lathyrus aphaca* they are remarkably large, while the leaves are entirely abortive. Those at the base of the same petiole are not always alike; one of them even in some plants becoming abortive, while the other persists. Stipules that are situated between the petiole and the branch are *intrapetiolar*; and, in the case of opposite leaves, when they are between the two opposite petioles, they are *interpetiolar*, or *intrafoliaceous*. Stipules sometimes unite together, and when so, if they form a sheath round the stem, they are called *ochrea*; and if the union take place between the petiole and the stem they are termed *intra-axillary*. They also often adhere to the petiole by their margins, and then one must use the greatest caution not to confound with them the cellular appendages of the petiole itself.

Leaves arise on the young shoots, or already exist *Vernation* more or less developed when the shoot begins to appear. At this period the external leaves frequently take the appearance of scales, and serve as a protection to the others. The compact mode in which the young leaves are arranged before expansion is called the *vernation* or *gemination*, and is determined by different causes, viz. their position on the stem and mode of adherence, the disposition of the principal nerves, and the different degrees of separation or union of the parts. All the appearances resulting from these may be reduced to three classes: 1st, They are folded or rolled longitudinally on the midrib, which remains straight; or, 2d, they are folded or curved,

Glossology. so that the summit touches the base; or, 3d, they are neither curved nor folded in a sensible degree.

Pl. CXII. The usual state of Exogenous plants is to have the leaves so folded that the two parts of the lamina on each side the midrib are applied to each other by their upper surface; but this is much modified by other circumstances. Thus, when two penninerved leaves are strictly opposite, and another pair at right angles to these, they are only half folded, in such a way as to inclose the inner pair; and such a veneration is termed *opposite* (fig. 45). When less decidedly opposite, one of the sides of each leaf is exterior and the other interior (fig. 46), and then the veneration is *half-equitant* (*semiamplexa*); and when the leaves are alternate or spiral, they are each of them folded by themselves, and placed side by side, when it is called *conduplicate* (fig. 47.) Palminerved leaves being considered as composed of several penninerved ones united by their margins for some part of their length, each of the divisions has a tendency to be folded, exhibiting a *plicate* veneration (fig. 48). The leaflets of palmate leaves present of course the same disposition. Some penninerved leaves, although folded together, have the margins rolled outwards, as in the rosemary, and the veneration is *revolute* (fig. 49); or they may be rolled in, as in the water-lily, and it is *involute* (fig. 50). These latter peculiarities are very rare among the Exogenæ, but common among the Endogenæ. When the young leaves are so narrow that they are not folded, but cover each other without any apparent order, they are said to be *imbricated*. Such plants as have a petiole that embraces the stem for some length (which chiefly happens among the Endogenæ) present a slightly different disposition. Here most of the leaves are reduced to a dilated petiole, and are simply curved and imbricated the one over the other, as in the coats of what are erroneously called bulbous roots (fig. 8); but there are other plants with a sheathing petiole, that show an inclination to a longitudinally-folded leaf (as in the *Iris*) as much as if they had a midrib, and the veneration is *equitant* (fig. 51); so called because, as they are alternate, each of them rides upon or embraces by its two margins the two margins of the leaf that follows it. Another disposition, but almost peculiar to the Endogenæ, is the *convolute* (fig. 52), as in the scitamineæ, where the limb is rolled round one of its margins on an axis. The veneration is termed *replicate* when the leaf is so folded that the upper part is applied to the lower, as in the aconite; and *circinal* when, instead of being folded, it is rolled in such a way that the apex serves as an axis; which last curious structure may be observed in the genus *Drosera*, and in the *Cycadææ*.

CELLULAR PLANTS.

The observations hitherto made relate almost exclusively to Vascular plants, the terms relating to the external forms of which alone can be applied also to the Cellular vegetables; so that, before proceeding to the reproductive organs, we may devote a few lines to such as come under the latter denomination. And here we must draw a line between such as are furnished with ducts in addition to mere cellular tissue, and those in which we find an entire homogeneity of structure; and, for the sake of distinction, we shall call the former *ductulosæ*, and the latter *educulosæ*.

Ductulosæ.

All belonging to this section, on account of the presence of ducts, and in some instances apparently of stems, more than one author of eminence has classed with vascular plants; but there are no spiral vessels present, and although it is often difficult to distinguish between spiral

vessels and ducts, we prefer to make the characters of the Glossology. two great classes of vegetables depend on the presence or absence of the former, rather than of the latter; the more so because we feel convinced, that, with the aid of spiral vessels, and not without them, can true seeds be produced. As ducts are always to be observed in roots, even in the most fibrous, so there is a presumption that true roots exist in all the ductulosæ. As, however, no spiral vessels occur above the root, there can be no collum or line of separation between stem and root, and therefore the whole plant may be viewed as one uniform body, every section presenting the same structure. On account of the appearance of stems, the ductulosæ may be said to have an axis.

1. The *Equisetaceæ* must first be noticed. These have Equise- little or no resemblance to the other ductulosæ, and almost tacææ. as little to the vascular plants. Their nearest affinity is perhaps with the genus *Casuarina* (one of the Exogenæ). Their veneration is straight. They have no true leaves, but a furrowed fistular stem, in which, under the cuticle or external membranous coating, so much silex is deposited as to render some of the species of great use in polishing furniture and other household utensils. The stem is moreover articulated, separating at the joints, each articulation being surrounded by a prolongation of the joint below it in the shape of a membranous toothed sheath; the number of the teeth, if not combined, corresponding with the number of the furrows on the stem. The stem is either simple, or has branches articulated like the stem, placed in whorls at their articulations, each whorl consisting of as many branches as there are teeth to the sheath.

2. The *Filices* or ferns seem to approach very closely to Filices. some of the Endogenæ, particularly to the palms, in general habit, and also slightly to the *Cycadææ*, which form part of the Exogenæ; but if our ideas be correct, the affinities that have been traced between them have been much exaggerated.

In our estimation, an entire fern corresponds only to a leaf among the vascular plants; and that part which has been called a *stem* or *rhizoma* under ground, or a *stipes* or *caudex* when erect and above ground, as in the tree ferns, is, we think, analogous to a mere petiole. Each leafy expansion has been termed a *frond*, without sufficient attention having been paid to its origin. But a frond whose stipes pushes out radicular fibres from its base, is, we think, similar to a simple leaf; while those species whose frond is attached to a rhizoma or caudex resembles a pinnate leaf. Thus the ferns do not resemble vascular plants, but only a portion of one. The veneration of all, with the exception of *Ophioglossum* and its allies, is circinnate like the *Cycadææ*; but instead of being rolled inwards, it is rolled outwards, unlike any vascular plant that we remember. As, however, the views here announced have not hitherto been adopted by any botanist, we may, in reference to the terms more generally in use, mention, that every leafy portion which rises above ground is termed a *frond*, and its stalk or support a *stipes*. The creeping part under ground or on the surface is termed a *rhizoma*, and when erect and like the trunk of a tree, a *caudex*. The stipes is flattish or concave on the side corresponding with the upper surface of the frond, and convex on the other. It is *glabrous*, or *rough*, or *prickly*, or *scaly* (*paleaceus*), or *downy* (*pubescens*), as in vascular plants. The frond is said to be *simple*, or *lobed*, or *pinnatifid*, or *pinnatifid*, as in a true leaf. It is even called *pinnate* when there is no membranous connection between the divisions, although there be no articulation at the base of each. In substance also it may vary from rigid and coriaceous to thin and membranous.

3. *Marsiliaceæ*. These are either creeping or floating Marsi- liaceæ.

Glossology. plants; the former have petioles to what are called their leaves, with a circinnate vernation like the ferns. The supposed leaves are of a coriaceous texture, and either consist of three or more wedge-shaped divisions, and are conduplicate when young; or they are entirely abortive, leaving nothing but the petiole, as in *Pilularia*. Those, again, which float have the leaves closely imbricated and sessile, and resemble the *Hepaticæ*, and appear to be involute, or folded together in vernation.

Lycopodiaceæ.

4. *Lycopodiaceæ* are seemingly intermediate between the ferns and mosses with which they were formerly confounded. They have either creeping stems or a cormus, with erect branches, which are either round or angled, and provided with leaves. The leaves vary from setaceous to ovate, are acute, undivided (with only one exception), smooth, and of a thick texture, resembling often in a slight degree those of the pine tribe. In several, however, they are plain and foliaceous; sometimes they are closely imbricated round the stem, or they appear distichous, with generally two other rows of smaller ones, that are appressed, and may be taken for stipules. They have either a middle nerve or none at all. In one genus the leaves are reduced to mere scattered teeth, and in another they are all radical, long, subulate, channelled above, and convex below. Their vernation is straight. They are usually found on mossy ground, sometimes on trees, rarely in or under water.

Eductulosæ.

These are entirely composed of cellular tissue, so that here we find as much uniformity in their internal structure as diversity in the other classes of vegetables; but, by a strange compensation, their external forms are even more varied than in the higher organised plants.

The entire mass of these vegetables appears to be composed of one substance, which takes different shapes, destined to fill different functions, without actually constituting distinct organs. Persoon, in speaking of the mushroom, has named the whole portion that does not serve for the reproduction of the species a *peridium*; Acharius has called it a *thallus* in the lichens; and Lamaroux, *frons* or *frond* in the algæ. De Candolle, again, is disposed to apply the term *thallus* generically to all the nutritive organs combined in the true cellular plants, at least to those of the algæ, fungi, lichens, and hepaticæ; and it would be well if botanists, who have made these tribes their study, had agreed to drop entirely the terms *leaves*, *stem*, or *roots*, which have no real affinity with those of vascular plants, and can be only applied metaphorically. But as they are generally retained in some of these orders, we will continue also to employ them.

Musci.

5. The *Musci* or mosses have most affinity with the ductulosæ, and approach very closely indeed to some of the lycopodiaceæ. What are called their roots consist of slender fibres of a brownish colour, more or less branched and jointed, which spring either from the base of the stem, as in *Phascum*, or along it, as in several species of *Bryum*, in which great part of the stem is sometimes covered with these radicular fibres. The stem is cylindrical, but is said to be compressed, plane, or tetragonal, according to the disposition of the leaves. It is often very short and simple, especially when the plant is annual, but is sometimes branched, either by pushing out roots near the base, or by emitting lateral or terminal branches, each of which denotes usually a year's growth, and they are thus called by Hedwig *innovations*. The leaves arise from the stems, being sometimes collected together at the base, sometimes

at the apex, and sometimes alternate or in a spiral: they are sessile, and embrace the stem at their base; and they have the appearance of oval or elongated scales, rarely obtuse, generally pointed or acuminate, and the point is not unfrequently prolonged into a long hair, or twisted like a cirrus or tendril. Only one instance is yet known where the hair-like point is branched. They are usually entire, but in *Diphyscium* and *Buxbaumia* they are laciniated. Some leaves are deprived of all appearance of a nerve, and are entirely formed of a homogeneous cellular tissue; others present in the middle a nerve variable in length; others again two nerves; and these nerves are formed of cells, which by their union imitate the nerves of vascular leaves. The margin is either entire, crenated, toothed, or serrated; and the serratures are sometimes so fine as to cause it to be called ciliated; but these appearances are not occasioned, as in vascular plants, by (as it were) an incision into the leaf, but arise from a mere contraction of the marginal cellules, more or less evident in the same species, and even specimen, in different states of its growth. The leaves, as we have said, embrace the stem, but sometimes in so very oblique a manner as to form two opposite vertical rows, and thus appear distichous, as in *Schistos-tega pennata*. But this must not be confounded with the structure in that section of *Dicranum* called *Fissidens*, in which the leaf is slightly folded, and the upper portion on each side of the nerve soldered closely together, while the nerve itself is prolonged at the back into an appendage equal to the half of the leaf. Some botanists seem inclined to suppose that these leaves, resembling those of an *Iris*, may be formed by the partial soldering of two closely approximated and obliquely placed leaves; but we are borne out in our view by an examination of the young leaves, either at the very base of the stems, or at the perichæetium, in which they are as in other mosses, the nerve not being yet provided with its appendage.¹

6. The *Hepaticæ* resemble much the mosses, and most of all the genus *Jungermannia*. But here there is no trace of nerves; and at the base of the leaves are often to be found leafy appendages or accessory leaves, falsely called stipules, sometimes united by the side to the leaf, and sometimes distinct from it. There are some species of this genus without these appendages, having the leaves vertical, scarcely at all embracing the stem, but having their margins prolonged down its side, so that the stem resembles a petiole furnished with distichous segments. When these segments are united by the edges on each side, we have a foliaceous limb, and such species are called *frondose*, the midrib corresponding to what is termed the stem in the others. Sometimes this midrib is obscure, as in *Jung. epiphylla*; in *Jung. pinguis* it cannot be traced, so that we may pass to the genera *Anthoceras*, *Marchantia*, and *Riccia*, in which we see only a nerveless foliaceous disc, representing both stem and leaves; pushing out from below, the roots; and from above, the organs of fructification. From the supposed existence of a stem and leaves, both musci and hepaticæ are said to have an axis.

7. The *Algæ* are principally found in water, and consist of expansions, sometimes filiform, sometimes foliaceous, or a mixture of these. Their perfect homogeneity has been acknowledged by all who have studied them, and thus the appellations of frond or thallus has been given to the whole mass of the plant. They present different degrees of consistence; some being coriaceous and of an olive colour, others cartilaginous and of a rose colour; some membranaceous, and others gelatinous. The

¹ Arnott, *Nouv. Disp. des Mousses*, p. 27.

Glossology. large species, in particular, so subject to be tossed about by the violent motion of the waves of the sea, are furnished with a small flat base called a *callous disc*, by which they are fixed to the rocks; and others are provided for the same purpose with short, blunt, and often thick, root-like processes. The foliaceous part of the algæ is often traversed with veins similar in appearance to the nerves in true leaves; but these are merely composed of elongated cellular tissue; while other species are entirely destitute of them. The cells of this tribe are variously approximated in the same plant; and hence we have frequently a sort of bark, distinct as it were from the central portion: sometimes they are arranged so that one cell constitutes the whole thickness of the frond, which thus becomes very thin and membranous; in other cases they are placed end to end, forming threads, as in the *Confervæ*. These threads are moreover usually furnished with disseminations or partitions at nearly equal distances, bearing a pretty constant proportion to the diameter of the thread. The genus *Hydrodictyon* presents a remarkable structure: the frond is composed of numerous pentagons, each of the five sides of which are confervoid threads, that in maturity separate from each other, and give rise to plants similar to that of which they formed a part. *Chara* is supposed to have an axis, the other algæ none; but some species of the fuci and confervæ tribes present as much an axis as the other.

Lichens. 8. Among the *Lichens* the variety of form is still greater. Some present plane foliaceous expansions, as in the hepaticæ; others are of a substance quite gelatinous, as in some *Algæ*. Some have cylindrical stems, more or less branched, of which several are provided with small, plane, leaf-like processes; in other species all these different forms are reduced to so small dimensions that the whole thallus, or nutritive organs of the plant, consists of a mere crust, composed either of foliaceous scales, of small stems compactly placed together, or of a granular or pulverulent matter. The surface presents also much variation: sometimes it is quite smooth; sometimes provided with hairs or ciliæ of different kinds; and sometimes it pushes out fibres, which serve to fix the plant. In many species the thallus, without the intervention of any fibres or roots, is so cemented to the rock or tree on which it grows, that it cannot be detached. In the flat species the two surfaces are very dissimilar, both in colour and structure. But lichens even appear to consist of two distinct layers of tissue. Of these the interior, which Eschweiller has termed the living or medullary portion of the thallus, is imperfectly cellular or filamentous; while the other, the cortical or exterior, seems to be merely formed of the dead cellules of the former, and to serve as a protection to it.

Fungi. 9. The *Fungi* present cells, sometimes round and sometimes elongated, in the form of hollow threads, which are either placed closely together or irregularly separated. Their consistence is variable, being soft or hard, fibrous or gelatinous, fleshy or coriaceous. They never grow in water. Their colours are variable, often vivid, but never truly green. There is scarcely anything that can be termed a frond or thallus; but instead of it there is often a peridium or sporangium, that covers the fructiferous organs; indeed, the whole plant may be viewed generally as a mass of reproductive matter. In the agarics and other allied genera there is a *stipes*, metaphorically called a stem, which arises from a membranous integument, termed a *volva* or wrapper, that in the young state envelopes the whole. The upper horizontal part of these plants is called a cap or *pileus*, which is provided on its under side with thin radiating expansions, termed gills or *lamellæ*, or with fine tubes. Some have a delicate fringe or veil (*velum*), that connects the margin of the pileus at a certain age

Glossology. with the stem: in a few this veil has the appearance of a ring round the stipes, and is then called an *annulus*.

REPRODUCTIVE ORGANS.

We now come to the reproductive organs, or those organs essential to the reproduction of the plant; and under this denomination we comprehend all those parts that are situated beyond the leaves. Linnæus first made the observation, that the parts of a flower were metamorphosed leaves; and this will appear very evident from considering the facility with which any one part changes into another. Thus, leaves gradually pass into bractæ, and the latter have often so much the appearance of true leaves as to be only distinguished from them by their position. Between bractæ and bracteolæ there is scarcely a limit; and either of these, when immediately under the flower, is often liable to be confounded with the calyx, or supplies the place of a calyx. Again, between a calyx and corolla there is the closest resemblance; so much so, that when one only was present, it has been a matter of dispute by what name it ought then to be described;—Jussieu and his followers calling it uniformly by that of calyx, but Linnæus pronouncing it a calyx only if green, and a corolla if coloured; whilst more modern botanists, to avoid a discussion attended with little good, have adopted instead of it the ambiguous term *perianth*. But horticulture shows this affinity in a still more striking degree; many of the primrose tribe in cultivation having the calyx changed into a corolla placed under the true corolla, and in every respect similar to it. In a double flower, all are aware, the stamina change into petals; and in the water-lily (*Nymphæa*) it is no easy matter to draw the respective lines of demarcation between stamens, corolla, and calyx. It is more difficult to admit at first the connection between the fruit and the others, instances of the metamorphosis being more rare. Thus, in half double flowers, the fruit, or parts of the fruit, or carpella as they are called, remain often unchanged, as in the peony; but in many truly double flowers, as among the pinks and carnations, every portion of the fruit is actually transformed into petals. On the other hand, in *Magnolia fuscata*, the stamens actually change into carpels; and we have specimens before us, exhibiting the same change in the *Salix Croweana*. In some species of *Ononis*, and the other genera of leguminous plants, in which there is usually one perfect carpel, we have seen it transformed into a leafy process, demonstrating that the carpel is nothing but a folded leaf.

The parts belonging to the flower, though thus primarily alike, yet differ much afterwards, particularly in their physiology. The more foliaceous parts, as the bractæ, calyx, and corolla, serve for the nutriment or protection of the others, which are more immediately called the sexual organs. In several parts of the flower we may distinguish the portions of the leaves of which they are composed, so as to detect more or less clearly the petiole and the lamina. Thus, in a calyx the sepals are usually formed by dilated petioles, although in the roses the lamina also makes its appearance. Of the corollas, the petals represent in general a dilated petiole; but sometimes an unguis or claw may be noticed, as well as a limb, conformable to the petiole and lamina of a leaf. Among stamina, the filament is the petiole, while the anther is produced by each side of the lamina being rolled inwards, and forming two loculi or bags. The carpels are formed by the folding of the lamina of a leaf, the ovules arising from the extremities of the lateral nerves. Here the petiole is often wanting, though in several genera of *Leguminosæ*, in the caper plants, and others, it is very distinct.

From what we have now said, it may be laid down as an

Glossology. axiom, that a flower is an assemblage of several whorls of foliaceous origin, arranged above or within each other, so closely that the internodia, or distance between each series, is not distinguishable. But this will be better understood when we come to the definition of the particular parts.

Inflorescence.

Inflorescence is the ramification of that part of a plant intended for its reproduction; or, in other words, it is the mode in which the flowers of a plant are distributed. The organs peculiar to it are peduncles, pedicels, bractæ, and bracteolæ or the accessory envelopes to the flowers.

As leaves are lateral, so must also be the parts of the flower, hence we might naturally expect the floral stem or branch to be prolonged beyond it; and this indeed often happens in monstrosities, as in some roses and pear trees; but otherwise the flower absorbs all the nutriment from the branch destined to that purpose. Thus we may state as a general law, that a flower is terminal on the little branch that supports it; and this branch is termed a *peduncle* or *pedicel*. The pedicel with the flower being thus precisely similar to a branch and its leaves, the flower-bud which gives rise to such must be analogous to leaf-buds; and the great difference between them is, that the latter elongate indefinitely in the form of branches, while the former do not elongate beyond the flower.

Flower-buds always, therefore, like leaf-buds, are terminal, or arise from the axils of leaves, which leaves are called *bractæ* or floral leaves; and those leaves which appear on the pedicel, between the bractæ and calyx, are called *bracteolæ*. These are often confounded, but are nevertheless essentially distinct; the former belonging more to the stem, the latter to the flower-bud. Bractæas and bracteolæ are often beautifully coloured, the more so, usually, the nearer they are to the flower. When a single one is rolled together, highly developed and coloured, and is placed at the base of the form of inflorescence called a *spadix* (fig. 53, *b*), it is named a *spatha* (fig. 53, *a*); and the upper ones, arising among the flowers themselves, are termed *spathellæ*. When several are verticillate, or densely imbricated around the base of the form of inflorescence called an umbel or capitulum, they are termed an *involucrum*; and those at the base of each partial umbel are called *involucella*. In the grasses there are usually two at the base of the spikelets, which receive the name of *glumes*; while the small ones surrounding each floret in the spikelet, called *glumellæ* or *paleæ*, may be viewed as involucella. Small imbricated bractæas are often called *scales*, as in the thistle and artichoke. On dissecting the capitulum of flowers of many of the *Compositæ*, small colourless bractæ may be perceived at the base of the florets;—these have received the name of *paleæ*, but they appear to be a mere continuation or modification of the scales of the involucre.

With regard to the axis of inflorescence and its bractæ, sometimes the axis itself, but more usually the branch which springs from it, is termed a *peduncle*. These peduncles often bear bractæ, from the axils of which arise secondary peduncles. The same may again happen, and the ultimate support to the flower is then termed a *pedicel*. A pedicel may be clothed with bracteolæ; but these have no flower-buds in their axils, and therefore each can only, strictly speaking, bear but one flower. In the honeysuckles there appear to be two flowers and two fruits to each stalk, but this is caused by the combination or union of the two pedicels that terminate the axis. When two or more pedicels spring near to each other from the axis of inflorescence, the axis is termed a *rachis*. Those axes that spring out of the earth, and bear no true leaves, are denominated *scapes*. Pe-

duncles are usually cylindrical or slightly compressed; in *Glossology*. *Xylophyllum* it is said to be flat or foliaceous, but this appearance originates rather from the expansion of the axis or rachis than of the peduncle itself. In the case of an umbel, the axis tends to dilate at the apex, and this dilatation seems to depend on two causes: it is either in proportion to the number of flowers that ought to be on the summit, or it becomes the larger the more sessile the flowers are on the horizontal expansion. That kind of umbel found in thistles and other compound flowers is a remarkable illustration of this: the expansion on which the flowers are situated here bears the name of *receptacle*; some few botanists calling it also, in particular cases *phoranth* or *clinanth*. These receptacles are sometimes quite flat, sometimes conical or cylindrical, and sometimes concave; and in the fig the margins of the receptacle are so approximated as to represent a bag, on the interior surface of which all the flowers are seated. By many botanists the axis of inflorescence is termed the peduncle, and the peduncles pedicels. But it is impossible here to lay down any certain rules by which these may be understood, the same author at different times using the same terms with a different meaning.

The inflorescence of plants is very various, and depends entirely on the power of developing the flower-buds in the axils of the bractæas. Two points are, however, common to all the forms: all must be axillary, or a modification of that, and have the flowers terminal on the peduncles or pedicels. They may be reduced to two classes: *simple*, when it is formed by the development of one bud and one branch; or *compound*, when it is formed by the development of several buds or branches.

Simple inflorescence.—When a flower-bud gives rise to only one flower, terminal on its peduncle, and the axis of the plant does not elongate beyond the bud, the flower is commonly called *terminal* and *solitary*. When, however, the axis continues to elongate, and the bractea retains the form and size of a leaf, the flower is called *axillary* and *solitary*. But if the buds, instead of giving rise to one terminal flower, have the axis elongated, bearing several flowers, and each flower on a peduncle, a *raceme* is produced; and when each flower is sessile, or placed in the axil of the bractæ, without a peduncle, a *spike* is formed. The difference between these two is very slight, or, more properly speaking, a spike is a mere conventional term, to imply those cases where the peduncle is scarcely perceptible; and, by the aid of horticulture, the one is frequently made to pass into the other. When the bractæas are nearly equal in size and closely imbricated, and the spike articulated with the stem, it is termed an *amentum* or *catkin*: but this articulation is often not to be detected; thus, in some willows, the male catkins fall off, while the female are permanent. The real spikes of the grasses are commonly termed *spikelets* or *locustæ*; and when we there speak of the flowers being in spikes or panicles, we actually mean that the spikelets are arranged in spikes or panicles. The *spadix* (fig. 53, *b*) is a sort of spike, in which the flowers are closely packed together upon a succulent axis, which is enveloped in a coloured convoluted bractea or spatha: the spadix is usually simple, but in some palms it is branched. A *raceme* differs, as we have said, from a *spike* by having the pedicels that issue from the bractæas more elongated. When a raceme has its peduncles spreading, elongated, and bearing bractæ, and pedicels again arising from these bractæ, a *panicle* is formed. Usually in these two the lower peduncles are only slightly longer than the others; but when they are very long, and the upper ones very short, it is commonly termed a *corymb*. But this appellation was given before the subject of inflorescence was properly studied, and with De

Glossology. Candolle we feel inclined to adopt here the terms *corymbose raceme*, or *corymbose panicle*. When the axis of a raceme is so very short that all the peduncles issue from one point at its apex, we have a simple umbel; and when the same happens to a panicle and to its branches, a compound umbel is formed. In these frequently the bractæ fall off early, or are abortive. A *capitulum* may be either a spike, raceme, or umbel, in which all the flowers are placed together in a globular head. Capitula also differ from each other by the form of the axis, many kinds of which may be seen among the *Compositæ*. Now, as all these different kinds of inflorescence spring from a solitary flower-bud,—and as a flower-bud is quite analogous to a leaf-bud,—and as in a leaf-bud the outer or lower part is first developed;—so in a spike, a raceme, a panicle, an umbel, or a capitulum, the lower flowers are first expanded, and this mode of flowering or order of expansion is called *centripetal*.

Compound inflorescence, or when the inflorescence is the result of the expansion of several buds or branches.—The most perfect instance of this is a true *corymbus*. Here the axis of the plant assumes the appearance of an axis of inflorescence, developing flower-buds which follow the centripetal order of expansion; but as it is a continuation of the axis of the branch, and as we have already observed that those leaf-buds nearest to the summit are first developed, so, in a compound inflorescence, the flower-buds towards the extremity of the axis are first evolved, and the lower ones the last. In a *corymbus*, then, each particular branch follows the centripetal law, while the whole mass of inflorescence proceeds in an inverted order. Although we have only referred to the *corymb* generally as a mode of inflorescence, individually it resembles a raceme, of which the lower flowers have long, and the upper ones short pedicels. The *Achillea millefolium* will well illustrate the *corymb*; each of what is commonly called the flowers of such a plant being a *capitulum*. Now, let us suppose that the *capitulum* of such an inflorescence is by some means reduced to a solitary floret,—and approximations to this are to be observed in many *Compositæ*,—we shall then have a *cyme*, in which the solitary central flower is first developed, and, lastly, the lower ones. This kind of expansion is called the *centrifugal*. Viewing, with De Candolle and Roeper, the terminal bud by which a branch is prolonged, as similar in all respects to a true leaf-bud, and supposing in the same way the existence of a terminal flower-bud, this kind of inflorescence has received the name of *terminal* or *definite*, because the flower being supposed to occupy the extremity of the branch, no more can be formed beyond it; while the centripetal inflorescence has been termed *indefinite* or *axillary*, because the axis being never terminated by a flower-bud, it may be elongated until there be no more juices left for the further development of the flower-buds. The term *cyme* is usually applied to those cases in which the primary branches issue from the same point, while the smaller branches are unequal, starting from different points, but elevating the flowers so that they may be nearly all in one horizontal plane, as in the elder or dogwood. But this is not always the case: the central portion may be elongated; and then, when the peduncles and pedicels are relatively opposite to each other, as in *Erythraea*, we have what are called dichotomous cymes. A *fasciculus*, on the other hand, is a contracted cyme, in which the lateral branches are very short, and the flowers are clustered together, as in many of the pink tribe. A *glomerulus* is when the cyme is so contracted, and the ramification is so little apparent, that it has been usually confounded with a true *capitulum*. This disposition is of rare occurrence, but is to be observed in some *Compositæ*. The last form of inflorescence we

shall notice is a *thyrsus*; and this may be conceived to be composed of cymes, arising from the axils of the leaves of a branch as it is successively developed. Thus the sage, the thyme, and the labiate plants, exhibit a *thyrsus*. The stem or branch is prolonged indefinitely, of which the lower flowers first make their appearance; but the inflorescence that proceeds from the axil of each leaf is a true cyme, in which the terminal flowers are first expanded.

If we be correct in what we have stated, the centrifugal mode of expansion is a reduced form of the centripetal, combined with the mode of development of branches. It ought, therefore, to be scarcely distinguished from the other; and cases do occur only referable by analogy. Roeper and De Candolle, who admit the existence of terminal flower-buds, observe that the terminal mode has two opposite bractæ, while the axillary has but one; and they apply this test with great ingenuity to the case of a solitary peduncle and flowers, in order that it may be referred to one or the other of the two classes.

Torus.

The *torus*, or the proper receptacle of the flowers, is an expansion of the pedicel, from which spring the petals and stamina, and seems to be formed by an abortion or partial development of one or both of these parts. Although, therefore, not properly by itself an organ, it is of great importance in the structure of flowers; for not only do the stamens and petals arise from it in the state in which they usually appear to us, but even when these are transformed into nectariferous glands, or into those doubtful bodies sometimes confounded with stamens and sometimes with petals. These appearances may therefore be met with either outside of the petals, or inside of the stamina, or between these. Usually, however, the torus is inconspicuous, and is reduced to a narrow circular space between the calyx and the pistil. When this zone is under the ovary the petals and stamens are said to be *hypogynous*, and the plants are termed *thalamifloræ*. But frequently the external part of the torus extends itself along the bottom or the interior of the calyx, and the stamina and petals are said to be *perigynous*, and the plants are called *calycifloræ*. When the inner portion of the torus expands along the pistil in a greater or less degree, the stamens and petals then seem to arise from the pistil, and are denominated *epigynous*. But there is still another case, when the torus extends both along the calyx and the pistil at the same time; and a necessary consequence of this is, that the tube of the calyx adheres to the pistil. The petals and stamens thus spring from a zone round the apex of the fruit, and between it and the calyx, and seem to be seated on the fruit itself; an appearance which has induced botanists to apply to it also the term *epigynous*. But if these two kinds of *epigynous* insertion were to be considered as but one, so ought in the same way what is called *perigynous* to be viewed as a modification of the *hypogynous*; for in the *perigynous* the torus, though connected with the calyx, was distinct from the fruit, and as much under it as in the true *hypogynous*; and, strictly speaking, both the *perigynous* and second kind of *hypogynous* may be regarded as combinations of the other two. Most modern botanists have, however, considerably altered the signification of some of these terms, especially when speaking of the insertion of the stamens. According to them, when the stamens contract no adhesion with either the calyx or the pistil, they are *hypogynous*; when they do arise from the calyx, but are free from the pistil, they are said to be *perigynous*, and such does not differ from the view we have taken above; but when the stamens contract an union with both the surface of the calyx and the pistil, they are

Glossology. termed *epigynous*, while the true epigynous insertion, or where the stamina are united to the style, but free from the calyx, receives the name of *gynandrous*. We think it right to state here, that it is in the altered sense that epigynous is now usually adopted in systematic works. When the torus is conspicuous, and of a fleshy nature, it is often known by the name of *disc*. To those bodies between the calyx and pistil, unlike either the stamens or petals, of the nature of which Linnæus was uncertain, he gave the general name of *nectary*.

Floral Envelopes.

These immediately surround the sexual organs, and are formed of one or more whorls of variously modified leaves. When there are two whorls, the plants are termed *dichlamydeæ*, and the outer is called a calyx, the interior a corolla.

Calyx.

The *calyx* is usually of a green colour, and foliaceous; each segment is termed a *sepal*; those like leaves are sometimes articulated at their base, when they are either quite distinct from each other, or cohere in the form of a lid (as in *Eschscholzia*) during the flowering of the plant. But they are often continuous with the peduncle, and consequently persistent. In such cases they are either distinct, or are united together by their margins. When the sepals are distinct, the calyx is said to be *bi-, tri-, or poly-sepalous*, according as there are two, three, or many leaves; and when soldered, it is called *gamosepalous*, or, by the strict followers of the Linnæan nomenclature, *monophyllous*; when only slightly united at the base, it is *partite* (*bi-, tri-, quadripartitus*, &c.); when united to the middle, it is termed *divided* (*bi-, trifidus*, &c.); and when soldered till near the apex, it is called *toothed* (*bi-, tridentatus*, &c.). If no teeth be perceptible, it is then *entire*; and in that case the number of parts must be determined analogically, or by other means. The cohering portion is termed the tube. Some sepals in the same calyx may cohere together in a greater degree than the others, and this gives rise to a *bilabiate* calyx. In a few genera with articulated sepals, the divisions cohere together, but separate from the tube in the form of a lid or operculum. Sometimes the calyx is reduced to a mere ring round the base of the corolla. In the Valerians this ring is afterwards developed into a *pappus*, formed of numerous long and fine radiating segments. In many *Compositæ* the margin of the calyx also constitutes a pappus, appearing either in the form of a ring, or bristles, or scales, or rough hairs (*pilosus*), or feathery hairs (*plumosus*). The calyx may be free from, or unattached to, the fruit; or the tube may be closely incorporated with it, or *adherent* (*calyx adhærens*).

Corolla.

The *corolla* is for the most part more or less coloured; and it exists in the greater part of the Exogenous plants. Sometimes it is very small, and reduced to the appearance of mere scales, and even in some genera is quite abortive; and when this happens, we must proceed with the greatest caution, and depend much on analogy, so as not to confound those groups of plants in which it ought to be present with those furnished with a perianth, in which a true corolla is always supposed to be absent. The divisions of the corolla are called *petals*. They are almost always articulated at the base, and consequently fall off; and when this happens at a very early stage, they are said to be *caducous*. When the petals have no articulation, as in *Campanula*, they either remain for a long time, or are *persistent*; or are *marcescent*, when they wither away without falling off. When the petals are quite distinct from each other, the corolla is *polypetalous*; or, when more or less united by

their margins from the base upwards, *monopetalous*, an incorrect term, which ought to be exchanged for *gamopetalous*; and then it may be *partite*, *divided*, *toothed*, or *entire*, in the same way as in the calyx. But petals may also unite in their upper parts, though distinct below. The vine, and the keel (*carina*) of a peablossom, or other papilionaceous flowers, exhibit this structure. When the lower part of a petal, as the petiole of leaves, is narrow, and consists of the union of all the vessels that expand and ramify in the upper portion, the contracted part is the *claw* or *unguis*; the dilated, the *limb* or *lamina*. If the unguis be long, straight, and closely approached to each other, even though distinct, a kind of *tube* is formed; but, properly speaking, it is only a tube when the claws are united. The orifice of the tube is termed the *throat* or *faux*; and this may be *naked* (*nuda*), or furnished with little *scales* or appendages, called sometimes a *crown*. The shape of the corolla is frequently of importance in distinguishing natural groups of plants. When all the petals are equal, it is said to be *regular*: when a monopetalous regular corolla has no tube, but swells out gradually from the base to the summit, it is *bell-shaped* or *campanulate* (fig. 54); and *urceolate* if it is swollen at the base, and contracted at the top: when there is a tube, and when it is narrow below, but dilates upwards, so that the limb is campanulate, the corolla is *infundibuliform*, or *funnel-shaped* (fig. 55): it is *rotate* (fig. 56) or *wheel-shaped* if the tube be very short, and the limb spreading and nearly plain; *hypocrateriform*, (fig. 57) when the tube is long, narrow, and cylindrical, and the limb spreading like a star; and *tubular*, when it is almost entirely composed of a narrow elongated tube, slightly dilated upwards; but this may be viewed as a very slender state of the infundibuliform. When the petals are unequal in size, or cohere unequally, the corolla is *irregular*; and if such petals unite, we shall have an irregular monopetalous corolla, which is said to be *labiate* or *bilabiate* (fig. 58) when the tube is more or less elongated, the throat open and dilated, the limb divided transversely into two parts or lips (*labia*), the one superior, the other inferior, which lips are subject to various modifications, one of the most curious being where the upper lip is so slightly developed as to appear to be absent, as in *Teucrium*. A *personate* (fig. 59, 60) or mask-like corolla is when the tube is more or less elongated, the throat very dilated, but closed up by the approximation of the limb, which has two unequal lips, as in the snapdragon; but it is often very difficult to distinguish between personate and labiate flowers. When the upper part of the tube of the corolla is split down on one side, and becomes flat, it is what is called *ligulate* (fig. 61), as in the hawkweeds, or exterior flowers of the daisy. A regular polypetalous corolla is said to be *rosaceous* (Plate CXIII. fig. 62) when composed of three, four, or five, rarely more petals (fig. 62, a), of which the claw is very short, and the lamina diverging from each other, as in the rose. When there are five petals, the unguis of which are elongated, forming a false tube, and concealed within the calyx, the corolla is *carophyllate*, as in the pinks; and when there are only four petals, with long straight claws (fig. 63, a), and patent lamina, forming as it were a cross, the corolla is *cruciform* (fig. 63), as in the wallflower; but it is not essential to this last, that the petals be perfectly alike and equal to each other. Of irregular polypetalous corollas, the only one that has received any particular designation is the *papilionaceous* (fig. 64). Here there are five petals; the upper one is usually larger than the others, and covers them before the flowers expand, and is called the *vexillum* or *standard* (fig. 64, a), from its resemblance to a flag; the two lateral ones, like the wings of a butterfly, are the *alæ* or *wings* (fig. 64, b); and the two lower ones, usually more or less

Glossology. united together by their lower margins, representing the keel of a ship, have been called the *keel* or *carina* (fig. 64, Pl. CXIII. c). Such a corolla belongs only to the *Leguminosæ*. In the case of an irregular corolla, whether *monopetalous* or *polypetalous*, one of the petals is sometimes provided with a tubular projection, when it is said to be *spurred* (*corolla calcarata*, fig. 60).

Perianth.

The *perianth*, called also *perigonium*, as we have already stated, is that ambiguous form of envelope which partakes somewhat of the appearance of a calyx, somewhat of a corolla. The Exogenous plants which possess this are called *monochlamydeæ*; and it exists in all the Endogenæ. One must not confound with these the plants in which the calyx and corolla is either deciduous or abortive. The parts of a perianth are strictly termed *tepals*. A corolla being never incorporated with the fruit, as many perianths are, there is a presumption that the latter are more of the nature of a calyx; and an anatomical examination of their external surface confirms this supposition. The internal and often coloured surface, however, is different, and is probably either the torus, or a petaloid expansion of the torus. Not only are the petals often absent, but even in some cases there is scarcely a rudiment of a perigonium, as in the genus *Euphorbia*.

Estivation.

As any law by which sepals and petals are disposed must obviously be very intimately connected with their *estivation*, or primitive arrangement in the flower-bud, so the estivation, or *præfloration* as it is sometimes called, though long neglected, has of late years been made to bear an important part in the classification of plants. The principal modifications are the *valvular* estivation (fig. 65), when the parts of an envelope are either plane or slightly convex, and merely touch one another by their margins, without the one covering any part of the contiguous one. When the parts are each closely folded together, and unite one to another by their margins into a monopetalous corolla, as in *campanula*, it is sometimes said to be *plicate* (fig. 66); but this is only a modification of the valvular. When they are slightly concave, and a margin of one slightly covering the margin of another, while its other margin is usually in its turn covered, the estivation is *imbricated* (fig. 67, a); but of this there are several variations. When an imbricated estivation is spirally twisted, which seldom happens, except when the parts are more or less respectively soldered together, it receives the name of *twisted* (fig. 67, b) or *contorted* (*æstivatio torsiva*, or *contorta*). In some plants the petals are folded irregularly, or crumpled, when their estivation is said to be *corrugated* (*æstivatio corrugativa*), as in the poppy; but this last ought rather to be considered as merely arising from an extraordinary development of the petals. Thus the petals of the *Cistus*, independent of being corrugated, are also twisted. When there are more than one series of parts of the same envelope, as in the water-lily, where there are several rows of petals, these alternate with those of the adjoining rows; each row or series may have its own mode of estivation, while, as a whole, it is termed *alternative* (*æstivatio alternativa*); in the spider-wort (*Tradescantia*) the outer row of the perigonium has a valvular, and the inner a corrugated and imbricated estivation. Again, when the same envelope may have two kinds, it will be readily allowed that the calyx may have one and the corolla another. Thus, in the mallow tribe, the calyx is valvular and the corolla twisted; in the flax and gum-cistus, both parts are twisted, but the corolla is twisted in an opposite direction to that of the calyx.

Sexual Organs.

Many of the ancient philosophers were well aware that there was a difference of sexes in plants as well as in animals; and Theophrastus even states, that the fruit of the female palm will not germinate, unless the pollen of the male be shaken over the spatha of the female when both of them are in flower; but it was not till the time of Grew that any thing certain was understood on the subject. He was the first who regarded the stamens as the male, and the pistilla as the female organs. Linnæus afterwards improved on Grew's ideas, and has adduced so many proofs from theory, and, what is of greater importance, from experiments of a tedious and delicate nature, that none now can experience the smallest doubt. An account of his arguments and experiments, and others of a late date, with the mode in which fecundation is supposed to be accomplished, forms one of the most interesting parts of vegetable physiology.

Stamens or Male Organs.

Each male organ is a *stamen*; but the whole taken collectively forms the *androcaum*, a term that bears the same relation to stamens as a corolla does to petals. These are situated between the petals and pistilla. Although a calyx and corolla be usually present in flowers, yet we have seen that they are not essentially necessary; but no plant can produce seed without the assistance of stamens and pistils, or their modifications. When stamens and pistils occur in the same flower, it is termed *perfect* or *hermaphrodite*; but, as sometimes happens by abortion or other causes, the stamens appear in one blossom and the pistilla in another. Again, according as these are on one or on different individuals, the flowers are called *monœcious* or *diœcious*; and, generally speaking, the flowers are *imperfect* or *diclinous* (*flores diclines*).

The number of stamens is variable, five or ten being the usual number among the Exogenæ, and three or six among the Endogenæ; but, on the one hand, these are subject to abortions, and on the other to multiplication. When the last takes place, it is by the addition of one or more rows similar to the first; so that although apparently indeterminate, they are actually a certain multiple of the primitive number.

A stamen consists of a *filament* (fig. 68, a) and an *anther* (fig. 68, b). The former is the body, which arises from the torus, and is sometimes cylindrical, or awl-shaped, or prismatical, and is even at times expanded, as if into a scale or petal. It is either articulated or contiguous with the torus. Part of it is often united with the petal, particularly when the petals themselves cohere; and the stamen is then called *epipetalous*. Its length is generally proportioned to the style, but it is sometimes wholly wanting, presenting a sessile anther. In the same flower the filaments are generally equal in length, and such are called *isostemonæ*, but in many they are unequal. In *Geranium* and *Oxalis*, where there are ten stamens, five are larger than the other five, and alternate with them. When there are six stamens, of which four are larger than the other two, as in the cabbage, mustard, and the other *Cruciferae*, they are called *tetradynamous*; and where there are four, of which two are longer than the other two, they are *didymous*, but here there is usually the rudiment of a fifth stamen, dissimilar from all the others. The direction of the filaments is usually straight, but they are in some plants bent inwards, in others outwards. In *Parietaria* (the pellitory of the wall) they are *reflexed*; for here the filament is bent backwards in such a way that the upper half lies along the lower, and between it and the perigonium. When the filament is too slender and weak to support the

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Pl. CXIII.

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Anther.

The *anther* is a kind of bag borne by the filament, and corresponds to the lamina of a leaf. It is either sessile, when there happens to be no filament, or it is placed at the top of the filament in three ways: it may be attached by the middle of its back to the slender apex of the filament, and is then *oscillating* or *versatile* (fig. 73); or it is attached by its base to the top of the filament, with which it then seems continuous, and is then *erect* (fig. 69); or it adheres to the filament by its back, and is then *adnate* or *adherent*, in which case the filament is often prolonged into an appendage. When adherent to the inside of the filament, it is said to be *introrse*, and to the outside *extrorse*. Each bag or cell of the anther is called a lobe; and the solid substance that connects them, and which in fact corresponds to the midrib of the leaf, is the *connectivum* (fig. 69, a). Usually the connectivum is very small and inconspicuous, but in some plants it is prolonged into an appendage, that may be confounded with an elongation of the filament; in others it is prolonged below, as in some heaths, into an awn or crest; in a few it is so broad that the bags of the anther are at a considerable distance from each other (fig. 70). Usually each anther has two lobes; but in a few plants there is only one, and this may happen either from some natural conformation of the plant (and only when the anther is erect), but more generally from the accidental abortion of one of the lobes (and then particularly when the lobes are distant), or by the filament happening to be split, each half bearing a lobe, and representing a distinct stamen. The reverse also happens, so that each anther may appear to consist of four lobes; but this arises either from each lobe being divided into two cells, by the back of the lobe being folded inwards; or it has really four, six, or more lobes (as in some willows), caused by the adhesion of two, three, or more stamens into one. The lobes or cells of the anthers open in different ways, by what is termed the *line of dehiscence*. This usually indicates the margins of the lamina of the leaf out of which the anther is formed, and therefore the most frequent position of this line is longitudinally along the middle of each lobe (fig. 71), in which case the anthers are *bilocular* or *birimose*. When this line does not open during its whole length, but only above or below, exhibiting two pores, as in the heaths, the anther is styled *biporose* (fig. 68); or when there is only one lobe, it is called *one-pored* (*poro simplici*). Very rarely, as in the lavender, the anther dehisces *transversely*; but the most singular case is when it opens by *valves*, as in the barberry and the laurels (fig. 72), that are free below, and hinged as it were by their upper edge. The anther has various shapes; the principal are *globular* when the two lobes form one globe, *didymous* when each of the two lobes are globose; the terms *linear*, *sagittate*, *cordate*, *reniform*, &c., are also to be applied to it in the same way as to leaves of plants. When the filaments are united, the anthers may be so likewise, as in *salix monandra*; or they may be free. But although the filaments may be free, the anthers may be united to each other by the margins, as in the *Compositæ*, and such are then called *syngenesious*. In *Stapelia*, where the loculi or cells of the anther are at a distance from each other, each coheres with the loculus of the neighbouring anther.

Pollen.

An anther contains and frequently emits a matter call-

ed *pollen*, the use of which is to give life to the ovule or young seed. The grains of pollen seem to arise from the extremities of the veins which are found in the leaf that constitutes the anther, and are probably formed from the spiral vessels. When the grains of pollen burst, they again discharge a multitude of very minute particles, called *molecules* or *granules*. When the grains of pollen easily detach from each other, they are said to be *pulverulent*, and then they may be either perfectly smooth without any viscous coating, or they may be viscous. Sometimes the viscosity is not at once perceptible, but may be traced by means of papillæ or small eminences on the surface, which are in fact secretory organs, giving rise to the viscous surface. The nature of these grains of pollen seems constant in each family of plants; and even the shape of these grains is sometimes of consequence in distinguishing natural tribes. In the *Asclepiadæ* and *Orchidæ* the grains are not pulverulent. Instead of separating readily, all the pollen contained in one cell or bag coheres into what is then termed a *pollen-mass*; or when each of those are divided into two or four portions, each is sometimes called a *mas-sule*. When in the *Orchidæ* these pollen masses are formed of grains united together by means of an elastic tissue, they are said to be *sectile* (as in *Orchis*); but in *Epipactis* and others they are *granulose* or *farinaceous*; and in *Coralorrhiza* and *Malaxis*, &c., they are of a solid compact substance.

Pistils or Female Organs.

The whole female organs in a flower, taken collectively, have been named *gynæceum*. This may consist of one or more *pistilla*, or distinct portions. Thus, in the primrose there is truly one, in *Ranunculus* many pistilla. The female parts being, like the stamens, petals, and sepals, formed of modified leaves, each pistillum may arise either from one such leaf or from the combination of several. These component parts are called *carpels*, and are placed in the centre of the flower. They may be arranged, 1st, round a real axis or column, which is the abortive prolongation of the pedicel, and are united to it by their inner angle: this is evident in *Malva* and *Lavatera*, and in *Euphorbia*. 2d, They may be verticillate round the central column, but hanging from its summit, and consequently only attached to it by the apex of the inner angle, as in *Geraniaceæ*. 3d, They may be verticillate round the summit of the axis, but erect, and only adhering by their inner angle at its base; and then the axis may be extremely short, as in *Sedum* or *Aconitum*, or it may be slightly prolonged, as in some rutaceæ. 4th, The carpels may be placed in a spike round the central column, as in the magnolias and tulip-tree, and some ranunculusses. 5th, But if the column be very short and round, the carpels, instead of forming a spike, will form a head round the column, as in the strawberry, where the column is fleshy. 6th, If the exterior portion of the axis be prolonged along the inner surface of the calyx, while the central part is not, we shall have a hollow cup, in the interior of which the carpels are seated, as in the genus *Rosa* or rose; and here the expansion of the axis is united to the tube of the calyx by means of the torus. All plants in their primitive state seem to have several carpels in each flower, but they may be reduced to a solitary one by abortion.

Each carpel (fig. 74) may be viewed as a folded leaf, of which the petiole seldom appears; but when it does it is called a *thecaphore*, or support to the fruit. The *ovules* or young seeds arise from the extremities of the veins, and therefore are usually attached near to the margins of the leaf, or, as it is folded, to both sides of the inner angle of the carpel; and the parts to which they are fixed are called the *placenta*. The ovules, like the pollen of an anther

Glossology. cannot probably be formed without the assistance of spiral vessels, and therefore are not to be looked for in the ferns, which are destitute of these elementary organs. The portion above the thecaphore, containing the ovules, is the *ovarium* (fig. 74, *a*). But the summits of the placenta are prolonged into two thread-like bodies, sometimes long, and sometimes very short. These are usually combined into one, which is then named the *style* (fig. 74, *b*); and its glandular apex, fitted for the absorption of the vivifying part of the pollen, is the *stigma* (fig. 74, *c*).

The carpels show a still greater tendency to unite with each other than even the exterior parts of the flower, though often this union seems to take place in a very slight degree. In *Stapelia* they appear to cohere only by the stigmas; in *Asclepias* by the stigmas and styles; in some by the ovaries alone, in others by the ovaries and styles; but the most complete is by the ovaries, styles, and stigmas. When the styles are united there is usually said to be but one, although the pistil ought more properly to be then called *gamostyle*; and in the same way, when the ovaries are united, there is still said to be one ovary, called by Linnæus a *germen*, consisting of a number of cells (*loculi*), although each of the cells is in fact an ovary.

The number of stigmas is determined by that of the carpels and styles, or their divisions; so that in a compound ovary, when we speak of one stigma, we actually mean several united into one mass (fig. 75, *c*), as in the primrose. It is *sessile* when there is no apparent style, *terminal* when placed on the top of the style or ovary, and *lateral* when attached to the sides of these organs. In substance it may be *fleshy*, *glandular*, or *membranaceous*, and even *petaloid* when it resembles a petal, as in the iris. Its form needs no illustration further than, when several are only partially combined, they are said to be *bifid*, *trifid*, or *multifid*, as if there were actually a simple one variously divided. Its surface is either *smooth* or *pubescent*; in some plants it is *penicilliform* (fig. 76), or of hairs forming a small tuft; in others, as in *Anemone*, *Clematis*, and many grasses, it is *plumose* (fig. 77), or furnished with hairs arranged in a line on both sides, like the vanes of a feather; and is *aspergilliform* (fig. 78) when the hairs are placed in many whirls around the stigma, like a bottle-brush. In a few orders, as *Goodenoveæ*, *Scavoleæ*, and *Brunoniaceæ*, the stigma is enveloped in a peculiar membranous appendage, called an *indusium*.

The *style* is in common language said to be *simple* (*simplex*), or *single* (*unicum*), either when it is the style to one carpel (fig. 74, *b*), or is formed by the union of several into one body (fig. 75, *b*), and is *divided* when the component parts are more or less adherent. But a style in its simplest state, being actually formed by the prolongation of the two placenta of a carpel, is even then a compound body. What are said to be two styles in the grasses (fig. 78) is thus in reality but one divided style. The two stigmas in *Compositæ* indicate the same structure, as well as those of many *Euphorbiaceæ*, where the divisions of the style and stigmas are double those of the carpels. The style may be included within the flower (*inclusus*), or protruded beyond it (*exsertus*). It is usually *terminal* in a compound ovary; and *lateral*, or *basilar* (from the base), in a simple one. In some plants with a deeply lobed ovary, the individual ovaries are attached to each other almost only by their bases; and hence the united style, springing from the point of union, forms as it were a continuation of the axis. The style is of various

shapes, but the most singular is when it is petaloid, as in the iris. It may be straight, or declinate, or ascending.

When no union takes place among the carpels, the *ovarium* is termed *apocarpous*, as in *Ranunculus*; and when there is an adherence, so that a compound ovary is formed, it is called *syncarpous* (fig. 75). In the former case there may be one or more pistilla, according to the number of carpella; in the latter only one. The ovary being formed of the lamina of the leaf, the edges of which may be sometimes rolled inwards, it is evident that we may have each carpel of two cells, as in *Astragalus*; but the division is very seldom perfect. When the ovaria are united into a compound or syncarpous ovary, the sides of the component leaves or ovaria (which sides are then termed *dissepiments*) may be evanescent, in which case we have a unilocular ovary with a central placenta (fig. 79); and when the leaves forming the ovaria are scarcely folded, but nearly plane, the placentiferous margins touching respectively the margins of the next ovaria, an unilocular syncarpous ovary is produced (fig. 80), having the placenta parietal, or exhibiting longitudinal lines on the interior surface. In a compound ovary, when the margin of the folded carpel is rolled inwards a little way, so that each ovary is almost bilocular, it is evident that the placentas must be situated nearly in the centre of each division of the fruit, in which case the two placenta in each cell may either unite closely together, as in *Kalmia* or *Rhododendrum* (fig. 81); or may diverge from each other (fig. 82), as in the gourds.¹ An apocarpous ovary may be known from a syncarpous one, when there is no abortion, by the number and position of the placenta. Although in every plant a carpel is present, yet in *Cycadææ* and *Coniferaæ*, where there is neither style nor stigma, the apocarpous ovary is plane or spread open like a scale, leaving the naked ovule, on its inner surface, exposed without any covering to the pollen; and even, though very rarely, the carpel may be so modified that the ovary is abortive, and nothing is visible but the naked ovule.

The ovary is *free* or *superior* when it contracts no adherence with the calyx; or *inferior*, and then it is syncarpous, and the tube of the calyx adheres with it. But the individual ovaria may be placed inside the tube of the calyx without being united with a syncarpous ovary, as in the roses, when they are said to be *parietal*. Between an inferior ovary and ovaries parietal it is sometimes difficult to draw a distinction; for when there is only one series of the latter, they may project so far towards the axis of the fruit as nearly to meet each other, and thus resemble a syncarpous ovary. But the difficulty is diminished by considering that, in a true inferior ovary, each carpel must so touch the calyx as to represent a syncarpous ovary seated within the tube. Each carpel must therefore unite laterally with its contiguous one, and at the same time all must be united at the axis of the ovary, so that there must result from the union one compound pistil. A compound pistil ought thus to indicate an inferior ovary. On the contrary, a separation of pistilla will always be accompanied with parietal ovaries (as in the rose and apple); and to these rules there is, we believe, no deviation. An apparent one is in that section of the genus *Rosa* called *systylæ*, as in the Ayrshire rose, and another in *Cratægus monogyna*, in both of which the styles unite into one; but even here a slight dissection of the ovary will show that the individual carpels are not strictly united at their inner margins, and consequently that the ovaria are

Glossology.
Pl. CXIII.
Ovarium.

¹ In this tribe the sides of the carpel or leaf connecting the exterior with the centre of the compound ovary are extremely thin and inconspicuous, while the inflexed margins are remarkably well defined; hence Seringe and De Candolle have been erroneously induced to suppose that here the midrib of the constituent leaf is, by some inexplicable means, placed in the centre of the ovary.

Glossology. parietal, and the compound ovary apocarpous, or of more than one pistillum.

Pl. CXIII. The partially adherent calyx of many saxifrages has led some botanists to say of them that the ovarium is *half inferior (semi-superum)*; but from their being two pistilla, it is apocarpous. In *Umbelliferae* there is but one pistil, although two styles; and the ovary is syncarpous and inferior. To avoid confusion, it might be better to adopt the terms of syncarpous and apocarpous ovaria, and adherent or free calyx; and a combination of these will indicate the structure of the fruit.

Each simple ovarium is more or less compressed; but the usual shape of a syncarpous one is ovoid. It is, however, sometimes elongated. In most plants it is entire, but in the borage tribe and labiate plants it is deeply lobed (Pl. CXIV. fig. 118).

Ovulum.

The *ovulum*, as we have already explained, is the body borne by the placenta, and is destined to become a seed after impregnation. The position of the ovula is of great importance in determining natural affinities. When it is fixed by its base to the bottom of one of the cells of the ovarium, of which it takes the direction, it is said to be *erect*, or if it hangs from the summit of the cell it is *inverted*; but if the ovulum is attached to the middle portion of the placenta, it may have an upright direction, and is called *ascendant*, or point downwards, and is then *suspended (appensum)*; or if it appears attached by its middle, so that one half points upwards and the other half towards the base of the cell, it is called *peritropal*. By most botanists, however, the erect and ascendant ovula are confounded under one name, and the inverted and suspended are known by the term *pendulous*. Either of these may at times resemble the other by an accidental inversion, when the ovule is said to be *resupinate*. The ovulum is either sessile, or on a stalk called a *funiculus* or *podosperm* (fig. 83, *a*), and in either case the point by which the connection is formed is usually termed the base of the ovulum, and its other extremity the apex. The ovulum consists of a nucleus and two external coats; the outer of which (fig. 83, 84, and 85, each at the letter *b*) is called the *testa* or *primine sac*; and the inner, the *internal membrane*, or *secundine sac*, or the *tegmen* (fig. *ææd.c.*) The base of the *nucleus* (fig. *ææd.d*) is always incorporated with the base of the internal membrane, and their common base is attached at some points to

the testa. The junction of the three forms the *chalaza*. The *chalaza* is sometimes at the base of the testa, but is more frequently at the apex of that external covering, so that the apices of the nucleus and tegmen, though in some plants pointing to the apex of the testa, are more usually directed to its base. Close to the apex of the nucleus, and consequently at the opposite extremity from the chalaza, a small aperture or *foramen* (fig. *ææd.e*) is to be observed in both the primine and secundine sacs. This foramen (called by Mirbel *exostome* in the primine, and *endostome* in the secundine) must always be found near the base of the ovulum when the apex of the nucleus points towards that base, and at the summit of the ovulum when the apex of the nucleus points to that part; and consequently the situation of this foramen will at once indicate the internal structure of the ovulum.¹ And this is of the greatest importance, as the future embryo is now well ascertained to be so placed in the nucleus that the radicle points directly to these orifices, as do the cotyledons to the chalaza; and a means is thus given of discovering even in the ovulum the future internal arrangement of the seed. In what we have said, we have presumed the testa, tegmen, and nucleus, to be straight; but in some plants all or some of these are more or less bent or curved, in which case we may have the apex of the nucleus directed towards its base, as in the *Cruciferae* and *Chenopodiaceae*, and even the grasses; or towards the side of the testa, as in the *Leguminosae*.²

The testa is usually entire, except at the foramen, but in two known genera, *Banksia* and *Dryandra*, it opens longitudinally, leaving the tegmen exposed. The surfaces of the testas of the two collateral ovules in these plants then unite, putting on the appearance of the dissepiment of a capsule; and the two cohering ovula seem to be as one bilocular ovulum. By this means the internal membrane or tegmen becomes the external envelope of the seed.

When the apex of the nucleus is contiguous to the base of the ovulum, a connection takes place between the base of the ovulum and the base of the nucleus, by a bundle of vessels (fig. 85, *f*) called a *raphe*. This raphe is almost always on the side of the ovule next the placenta, and even the apparent exceptions to this rule tend to confirm it. Thus in the tribe to which *Euonymus* belongs, the ovules are erect, yet in some species of that genus they

¹ Brown and Mirbel term the chalaza the base, and the foramen the apex of the ovule, without regard to the point of attachment of the ovule to the placenta, which must be attended to in studying their works.

² Mirbel, as we have already stated, considers the base of the ovulum and seed as at the chalaza, and he divides seeds into *orthotropous*, *anatropous*, and *campulitropous*. The first are attached to the ovary by their base, having a perfectly regular form, and the axis is rectilinear. The *campulitropous* are also fixed to the ovary by their base, but their form is irregular, and their axis is curved, so that the two extremities meet. The *anatropous*, like the *orthotropous*, have a rectilinear axis, but they are resupinate on their funiculus, to which they adhere longitudinally, and by means of which they are attached to the ovarium at a point near their apex. These variations are explained by Mirbel, by what he denominates the *statics of developments*, or the force of expansion, or of inertness, or of contraction of the different parts of the ovulum; and he has endeavoured to show how these causes, acting either together or independently, alter or preserve the regularity of the primitive shape. Every ovulum, according to him, has at first a regular form, and the chalaza close to the hilum or funiculus; so that if the force of development be equal at all points, the regularity of shape must be preserved, but if it be greater on one side than on the other, an irregularity must ensue. In this way an equilibrium of forces must have taken place in an *orthotropous* seed, but not in the *anatropous* or *campulitropous* ones. When an ovulum tends to become *anatropous*, the chalaza or the inner extremity of the funiculus is pushed forward in a slightly oblique direction, and inverts the ovulum, so that its base is placed where its summit formerly was, and *vice versa*; a kind of resupination which is stated by Mirbel to take place in a very short time,—but notwithstanding he appears to have followed the successive changes. By this inversion the vessels of the funiculus become elongated in proportion to the length of the axis of the ovulum; and such prolongation, united laterally to the primine sac, and extending from the exostome to the chalaza, is what is termed the raphe. Three characters distinguish the ovule destined to become in maturity a *campulitropous* seed: the indissoluble union of the hilum and the chalaza; the great force of development of one of the sides of the ovule; and the inertness or even contraction of the opposite side, which remains stationary, or even diminishes, while the other elongates. Had this last side been free in its development, it would have elongated in a straight line; but it is constrained by the inertness or contraction of the opposite one, and can therefore only increase by turning round the other as a centre. From this arises that annular form which most of the *campulitropous* seeds possess; and hence also, in all curved seeds, the chalaza ought to be constantly opposite to the hilum, and the foramen at the opposite extremity. Although all seeds may be reduced to these three types, yet by their development being stopped before the ovulum attains to the perfection of the type, and from similar results arising sometimes from different causes, many anomalies may be expected. Several have been pointed out by Mirbel himself. Thus, in the pea, the young ovule exhibits the *anatropous* form; but afterwards the raphe remains stationary, while the opposite side expands, and the seed appears *campulitropous*, but with a raphe.

Glossology. appear suspended, and then have the raphe turned away from the placenta; but if we consider a moment, we shall see, that such may arise not only from their naturally hanging down, but by an erect ovule being as it were pushed over by some peculiar formation of the plant, and thus become resupinate. But a naturally erect ovule become resupinate, must have the part that was formerly next the placenta now turned away from it; and in the same way a naturally pendulous ovule must also, when resupinate, have its raphe turned away from the placenta; and thus we may conclude, when such is the position of the raphe, that the ovule is resupinate, and that the opposite apparent direction is the true one, whether erect or pendulous. This may readily be seen in the genus *Penæa*.

It was till lately generally supposed that the *aura pollinaris*, molleculæ of pollen, or by whatever other name the vivifying influence might be called, after being absorbed by the stigma and transmitted through the style, entered the ovulum at its base, either directly or by means of the funiculus. The discoveries of Brown and others have however now proved satisfactorily that the entrance takes place by the foramens; and Brongniart has ascertained, that in many, if not in all plants, at the moment of impregnation, a slender tube or filament is protruded through the orifices from the apex of the nucleus, for the more ready absorption of the pollen granules, but which, after having served the intended purpose, withers away, leaving only a small projection or papilla, which nearly closes up the foramens. Until, therefore, it was decided that the pollen had not access to the nucleus by the funiculus, but by the foramen, the idea of a naked ovule was inadmissible, and many ingenious but erroneous hypotheses were made to explain the fruit of the pine, &c. in which an exposed ovulum exists.

But the nucleus is itself a compound body, and consists of two parts. The one is a parenchymatous or loose cellular substance, called by Malpighi the *chorion* (fig. 85, *g*); and this again includes a little vesicle or cellular bag (fig. 85, *h*) termed by the same author the *amnios*, originally filled with a mucilaginous fluid, called the *liquor amnios*. It is in the interior of this bag that the embryo is formed. As the phrases *chorion* and *amnios*, having reference to animals, are objectionable, the former has now been termed the *parenchyma of the nucleus*, and the latter the *embryonic sac*. In some plants this parenchyma occupies the great part of the nucleus, but in others it is reduced to a thin transparent membrane, under which the sac lies.¹

To complete our account of the ovulum, of which we have been obliged to explain the anatomical structure, in order to lay the foundation of a correct knowledge of the parts of the seed, we have further to say, that in many, but not in all plants, a tubular prolongation (fig. 85, *h*) of the embryonic sac takes place about the time of impregnation, from that extremity of it which is next the base of the nucleus, extending to that base, and connecting it with the sac. This is very conspicuous in the almond and yellow water-lily. Malpighi named it the *vas umbilicale*; and Gærtner viewed it as a continuation of the vessels of the umbilicus, but erroneously, as it is extremely doubtful if in any case its connection with the base of the nucleus is completed until the embryo, after fecundation, requires a considerable degree of nourishment.

Fruit.

Fecundation having taken place, the floral envelopes usually fade away, the stamens disappear, and the pistillum begins to increase in size and become the *fruit*. Although the style and stigma, having fulfilled their functions, are now nearly obliterated, the fruit ought always to show some traces of them on its surface, whenever they were seen on the ovarium. In *Cycadæa* and *Coniferæ*, where the ovulum is exposed to the immediate action of the pollen, there is neither style nor stigma upon the scale or open ovary, so neither is there on the fruit, indicating the existence of naked seeds; but the grains of corn and wheat and other grasses, having the remains of a style, are true fruits; the supposed naked seeds of the borage tribe and labiatae are for the same reason parts of a fruit. As the pistillum advances towards maturity, many alterations take place, in consequence of abortion, non-development, obliteration, or even union of parts. Thus a compound pistil having a compound or syncarpous ovary, may have a fruit of but one cell, as the hazel-nut; or a solitary pistil may, by the involution and divarication of its placentas, change into a fruit with several cells; or the placenta itself may expand horizontally, dividing one true cell into several spurious ones. In all cases, however, the contrasting the structure of the pistil with that of the fruit will materially aid us in our investigations.

The *base* of the fruit (fig. 86, *a*) is the part where it is joined to the peduncle. The *apex* (fig. 86, *b*) is where the remains of the style are found.

The portion of the pistil called the ovarium is in the ripe fruit termed the *pericarp*; it is sometimes extremely thin, as in the grasses, the borage tribe, the *Compositæ*, &c. but is often extremely thick, and even fleshy. As the leaf of a plant has an upper and under surface, and an intermediate parenchyma in which the nerves are placed, so the pericarp consists likewise of three portions: the outer coating, which often determines the form of the fruit, called the *epicarp* (fig. 87, *b*); the inner lining or the *endocarp* (fig. 87, *d*); and the parenchymatous or fleshy substance between these (fig. 87, *c*), termed the *sarcocarp* or *mesocarp*. When the ovary is inferior, or united with the tube of the calyx, as in the apple, the epicarp becomes confounded with the tube (fig. 87, *a*), and then the sarcocarp may be readily taken for the parenchyma of the calyx; but in peaches and other fleshy fruits not adherent to the calyx, it is the sarcocarp that constitutes the flesh. The endocarp is usually a mere membrane, but it sometimes is incorporated with a portion of the sarcocarp; and when this portion becomes hard and osseous, it constitutes what is called a *putamen* (when it contains but one seed), or *nucules nucula* (when they contain several seeds). As an ovary may be apocarpous or syncarpous, so also may be the pericarp. It is therefore said to be *unilocular* (fig. 104 and 105) when there is one cell, and *bi-, tri-* (fig. 88), or *multilocular*, according to the number of cells. These *loculi* or cells are separated from each other by *dissepiments*. By reverting to what has been said about the ovarium, we shall easily perceive that true dissepiments can only be formed in one way. Two contiguous portions of the endocarp are projected into the interior of the pericarp, and are agglutinated together by the parenchyma of the primary leaf, now the sarcocarp.

¹ Mirbel takes rather a different view of the subject: he considers the nucleus as a mere envelope, terms it the *torcine*, and states that it incloses two others,—the *quartine*, which appears to be attached to the summit of the cavity, and that containing the *quintine*, or embryonic sac, the last envelope, and adhering at both extremities to the quartine. But each of these parts, if they do exist, has not been seen in every ovule; and in those in which they have been observed, they are not all visible at one time, but in succession: when the first is most evident, the last are merely rudimentary; and when the latter are developed, the former are scarcely distinguishable. Mirbel even points out five distinct periods of development.

Glossology. The dissepiment is thus always of two membranes, which must contain between them vessels and nerves; and these again will point out the former junction of the two membranes, even although, by the sarcocarp drying up, they should have lost their adherence, and have separated from each other. Dissepiments may be *complete* when they extend from the base of the epicarp to its apex, and *incomplete* when they permit two contiguous cells to communicate with each other. In the thorn-apple (*Datura stramonium*) there appears at first sight to be four dissepiments, two complete and two incomplete; but in reality in this plant there are only two, curiously modified.

The axis of the fruit is that round which the constituting carpels are placed. It is sometimes not apparent. When it actually exists it is usually termed a *columella*, as in *Euphorbia*, *Lavatera*, &c.; but when two mericarps are united together it is called the *commissura* (fig. 92).

As seeds are inclosed in the pericarp, it is essentially necessary that they, after maturity, have the means of escaping. Sometimes, however, the pericarp does not open naturally, but is either split by the process of germination, or rots away by the action of the soil or of the atmosphere. It is then said to be *indehiscent*, as in the grasses, *Compositæ*, &c. But usually it splits open, and is then *dehiscent*; and the pieces into which it divides are termed *valves*. In some the dehiscence is incomplete, as in *Antirrhinum* (fig. 89), where it is indicated by two pores at the apex, and in many *Caryophyllæ* (fig. 90), where the valves only separate at the apex into teeth. The pericarp is said to be *uni*-, *bi*-, or *multivalved*, as there are one, two, or many valves. When a fruit is in its simplest state, or formed by the transformation of one carpellary leaf (Plate CXIV. fig. 104), there may be two sutures or lines by which it may open. The one is (*a*) where the margins of the leaf or the placenta meet, and this is called the *ventral suture*; the other, or the *dorsal suture* (*b*), is at the part corresponding to the midrib of the leaf. But, in a compound fruit, an opening may also take place at the junction of any two carpels; and from these considerations the various kinds of dehiscence may be explained. If the line of opening corresponds with the junction of the carpels, the dehiscence is *septicidal* (fig. 91); so that where there are dissepiments, these are divided each into their two constituent membranes, and the cells remain closed at the back; or the valves were formerly said to be alternate with the dissepiments, or to have their margins turned inwards. If the opening is by the dorsal suture of each carpel, the dehiscence is *loculicidal* (fig. 86 and 88); so that here the dissepiments do not divide into two portions, but the cells are opened at the back, or the dissepiments were said to be opposite to the valves, or the valves to bear septa in their middle. In some plants the cells remain closed, and separate in that state from the axis, which is then an extension of the peduncle (fig. 92). In others the placentas separate from the dissepiments and adhere to the axis, while the cells open, and, with the dissepiments, separate from it (fig. 93). When the dissepiments adhere to the axis, but separate from the back of the valves or carpels, the dehiscence is said to be *septifrage* (fig. 94). When a dehiscence, instead of being vertical or longitudinal, takes place across the cells, it is called *transverse* (fig. 95), as *Anagallis*.

The shape of the pericarp may be *spherical*, or *ovate*, or *lenticular* (like a lens), or *prismatical*, which terms are easily understood. It may be *acute*, or *obtuse*, or *lobed*. When the fruit is inferior it is often crowned by the teeth of the calyx; and these teeth in many *Compositæ*, as we have already explained, are represented by a series of hairs called a *pappus*, which is either (fig. 96) *pilose*, when each hair is simple, or *plumose* (fig. 97), when each hair presents on each side

a series of finer hairs, arranged like the wings of a feather. **Glossology.** In *Valeriana* (fig. 98) the limb of the calyx is at first rolled up so as to form a circular ring on the top of the ovary, but afterwards (fig. 99) expands and elongates, and constitutes a true plumose pappus. When the tube of the calyx is filled by the seed, the pappus is said to be *sessile* (fig. 97); but when it is much attenuated at the apex beyond the seed, a kind of stalk or stipes is formed to the pappus, and it is termed *stipitate* (fig. 96), but between these there are some states that tend to weaken these as characters.

Fruits have been classified in several ways, and have received various designations. From what we have already said of the ovarium, we trust the following division may be easily understood. A fruit is either simple, multiple, compound, or aggregated.

It is *simple* when it is the maturation of a single carpellary leaf. Fruits of this class may be either *indehiscent* or *dehiscent*. Of the former is, 1. the *caryopsis*, where the pericarp is very thin and membranous, and so closely united to the solitary seed as not to be distinguished as a separate body, as in the wheat and barley (Plate CXIII. fig. 100): 2. an *utricle* is similar to the caryopsis, the pericarp being membranous, but it has no adherence with the seed: 3. an *achenium* is also one-seeded, but here (fig. 101) the pericarp is hard and bony, as well as distinct from the proper covering of the seed, as in the *Compositæ* (these three are often confounded): 4. a *samara* (fig. 102) is a coriaceous, membranous, very compressed, few-seeded, indehiscent fruit, that is often prolonged laterally or at the apex into wings or appendages, but this kind does not perhaps exist in nature in an uncombined state: 5. a *drupe* is a fleshy nut inclosing a putamen, as the cherry and peach: 6. a *nut* (*nux*), in its strictest sense, as now adopted by Richard and De Candolle, differs slightly from a drupe; it contains a putamen, but the sarcocarp (then called *nau-cum*) is coriaceous instead of being fleshy. The dry dehiscent fruits are, 7. the *follicle* (fig. 103), or a carpel dehiscing by the ventral, and having no dorsal suture: 8. the *legume* (fig. 104), having both ventral and dorsal sutures, by either of which, or by both or neither, it may dehisce; rarely the sides fall off, leaving nothing but the sutures, which then form a kind of frame called *replum*. The legume is, strictly speaking, unilocular, but in some plants appears bilocular, from an inflexion of the ventral suture (fig. 105). In some instances it is separated into several parts by horizontal partitions (fig. 106) arising out of the placenta, or by contractions of the legume itself, as in *Hippocrepis* or *Scorpiurus* (fig. 107), at which it falls into pieces, when it is said to be *lomentaceous*.

A fruit is *multiple* when the ovarium is apocarpous. It has more than one style, and is formed of more than one carpellary leaf in the same flower. The carpels may be either at a distance from each other or slightly connected, but the endocarp does not separate from the epicarp to form dissepiments. Few individual names have been given to this kind, botanists having usually contented themselves with saying that it is *composed of achenia, drupes*, &c. according to the structure of each individual carpel. When these are arranged upon or round a real or imaginary axis, the fruit has been by some called, 9. *eterion*; the strawberry (fig. 108), bramble, ranunculus, anona, and peony, are examples. 10. The *ponum* or *melonida* also belongs to this class; here the fruit is crowned by the teeth of the calyx, and is formed of several parietal carpella attached to the interior of the tube by the intervention of a usually thick and fleshy expansion of the torus. Of this there are three varieties. 1st, When the numerous achenia are attached to the slightly fleshy calyx, the fruit is a *hip* or *cynarrhodon* (fig. 109), as the rose. 2d, When the calyx of the hip does not become

Glossology. fleshy, as in the agrimony, the fruit is called *amalthæa*. The third variety is the *apple* or *pomum* (Plate CXIII. fig. 87), in which there is but one longitudinal series of carpels attached to a very fleshy calyx, and so enlarged as to appear to meet in the axis of the fruit. A pomum, then, at first sight seems to be the maturation of one inferior plurilocular, instead of several parietal ovaria.

Pl. CXIV.

A compound fruit is derived from a syncarpous ovarium, and is formed by the union of several carpellary leaves. In *Ranunculus*, and other plants with apocarpous ovaries, more than one series of carpella are often matured. This, however, happens rarely among the syncarpous, but it sometimes occurs; thus, in *Nicotiana multivalvis*, where the fruit is a capsule, two rows of carpellary leaves are united into one pistillum. 11. A capsule (Plate CXIII. fig. 89 and 90) is a dry, dehiscent pericarp, usually many-celled; but may, by the placenta being parietal, or by the disappearance of the dissepiments, be occasionally one-celled. 12. When a capsule opens transversely, it is called a *pyxidium* (fig. 95). 13. When a capsule bursts into achenia, it is termed a *di-, tri-, or polakenium*. 14. When the tube of the calyx adheres to one of this last kind, the fruit is called *cremocarpium* (fig. 92), as in the *Umbelliferae*; and each of the two constituent parts (*a*) a *mericarpium*. 15. When a capsule is composed of *cocci*, or cells that open elastically by a membranous spring placed at the bottom, it sometimes has got the name of *elaterium* or *regma*, as in *Euphorbia*. 16. A *siliqua* when long and narrow (fig. 110), and *silicula* when so short as to be almost as broad as long (fig. 111), is a dry pericarp formed of four carpels, the placenta of which are parietal: moreover, the stigmas and placenta of an opposite pair of these carpels are abortive, so that the carpels themselves represent valves, while the two other intermediate carpels are contracted, and project, from the inner side of each placenta, a membrane, which unites at the centre of the fruit to the corresponding opposite membrane, the four membranes being ultimately united into one dissepimental membranous expansion.¹ In common language, then, a *siliqua* or *silicula* may be defined to be a dry, dehiscent, two-valved fruit, in which the seeds are attached to placenta situated at the sutures of the valves, and which is usually divided into two loculi or cells by a false dissepiment or prolongation of the placenta, that is parallel to the valves. After the valves have fallen, the placenta often remain, with or without the dissepiment or septum, in the form of a replum. 17. When two samara are applied to each other so closely that there appears but one (fig. 115), as in the ash and elm (the compound nature of the fruit, however, being still evident from the double stigma even when one of the cells is abortive), the fruit is still commonly called a *samara*; but in *Acer*, where the constituent parts are readily distinguished, the fruit is said to consist of two *samaroid* carpels. 18. A *carcerulus* (fig. 116) is dry and indehiscent, with several cells and seeds, as the lime tree. 19. A *gland* is a dry, bony, indehiscent, one-celled and one-seeded fruit, but always the result of an ovarium with several cells and several seeds. The pericarp unites closely to the seed, and is inclosed more or less in a sort of involucre. This term is sometimes restricted to the case where the involucre or cup is coriaceous and scaly, as in the acorn; and when it is foliaceous, as in the hazel, it is called a *nucula*. Many botanists apply to both of these the name *nut* or *nux*. When the involucre is entirely wanting, and

the fruit is borne on a fleshy support, it has been termed *Glossology*. a *xyloidium* (fig. 117), as in the cashew-nut. 20. A *microbasis* (fig. 118) applies to the fruit of the *Labiata* and *Borraginæ*. Here it is tetraspermous or four-sided, and appears to be quadrilocular; and each division, resembling a distinct achenium, is placed around the slender base of the style; in reality, however, it is a bilocular fruit, each cell being divided by a spurious dissepiment into two, each one seeded, that in general easily separate from each other. 21. In a *sarcobase* (fig. 119) the ovary is syncarpous, or of one pistillum; but all the carpels appear distinct, and are borne on the fleshy base of the compound style, as in the *Ochnaceæ*. 22. A *nuculanum* is a fleshy fruit, not adherent to the tube of the calyx, and including several distinct putamens or nuckles. 23. An *osteocarpium* is a superior fleshy fruit, with several cells, the sarcocarp being bony. 24. The *balausta* is a somewhat coriaceous, plurilocular, polyspermous, inferior fruit, adherent with the calyx and crowned with its teeth, as in the pomegranate and myrtle. 25. A *berry* (*bacca*) is a succulent fruit, with a membranous pericarp, the seeds of which lose their adhesion when ripe, and lie loose in pulp, as the gooseberry or grape (fig. 120). 26. The *orange* or *hesperidium* is a multilocular succulent fruit, similar to a berry, but having the epicarp, sarcocarp, and endocarp well defined, and forming a leathery pericarp. The loculi or cells are filled with pulpy bags or vesicles, which are mere cellular extensions of the sides of the carpella. 27. A *pepo* or *peponida* is a fleshy inferior fruit, either indehiscent or bursting irregularly, and consisting of about three carpels, each of which is divided into two loculi by its placentiferous margin (Plate CXIII. fig. 82) being so introflexed as to reach the dorsal suture. The sides of the carpel, and even sometimes the introflexed portion, usually disappear in the ripe fruit; so that at first sight it would be said to be, and has been so described, a one-celled, fleshy, indehiscent fruit, with parietal placentas that send out sometimes false dissepiments towards the axis (fig. 121), as the cucumber and gourd. We do not agree with Richard in calling the fruit of the *Nymphaea* or *Nuphar* a peponida. In these there is in fact an apocarpous ovarium (fig. 122), each carpel being merely attached by its back to an expansion of the torus, which soon decays, leaving the carpels distinct from each other. The torus also surrounding the styles and the stigmas, makes the whole assume the false appearance of one pistillum; and that part of each carpel which is directed towards the axis of the fruit is the placenta, and not a dissepiment. There is, therefore, little or no difference between the *Nymphaeaceæ* and *Nelumbo-naceæ*, except that the carpels of the latter are monospermous. The fruit of *Hydrocharideæ* resembles in some degree a peponida; it is one-celled, and the placentas are truly parietal, but project from the false dissepiments towards the axis, appearing sometimes as if a many-celled fruit.

Aggregated fruits are formed out of several flowers. 28. An *amentum* or *catkin* exists in those plants to which there is no floral envelope; but in place of it there is a membranous bractea situated below each pistillum, as in the *Salix* or willow. 29. When the bractea of an amentum becomes extremely small, and the carpellary leaf is a large indurated scale, open at all periods of its growth, and containing naked seeds, we have a *cone* or *strobilus* (fig. 123), as in the pine tribe; and when this is much re-

¹ If *a', a', a', a'*, in fig. 112, be four carpels with parietal placenta and ovules (*U', U', U', U'*, *b, b, b, b*), and if *c', c', c', c'*, be the stigmas to each, then if *c', c', U', U', U', U'*, be abortive or disappear, we shall have the appearance in fig. 113; and if, in addition, the placenta *b, b, b, b*, project a membrane into the centre of the fruit, when these membranes unite we shall have the section of a *siliqua* or *silicula*, as in fig. 114.

Glossology. duced in size, and the scales firmly cohere, it is called a *galbulum* (fig. 124), as in *Thuja*. The term *cone* is also often applied to the fruit of some *Proteaceæ*; but in these there is a perianth, and the indurated scales are real bractes, and it may be sufficient to say of their flowers that they are aggregated. 30. The *sorosis* (fig. 125) is when several fruits (*b*) are united together into one body by the intervention and combination of their respective fleshy and highly developed floral envelopes (*a*), as in the mulberry and pine-apple. 31. The *syconus* or *fig* is when the fruit is composed of many small drupes or achenia, collected on the interior of a fleshy and succulent receptacle formed by the hollow dilated apex of the peduncle. Each of the achenia belongs to a distinct floret, and therefore, when the fig is expanded into a nearly flat disc, as in *Dorstenia*, it resembles the receptacle of the *Compositæ*, and is therefore scarcely entitled to be considered as a peculiar fruit.

Placenta.

Having thus given a rapid sketch of the different kinds of fruits, we must now revert to the carpel, of which they are composed; and we would again recall to the recollection of our readers, that this is a modification of a folded leaf, towards the margins of which, arising from the extremity of the nerves, are placed the seeds. The parts to which these are attached must therefore always be two (however closely they may be approximated) in each carpel; they are immediately connected with the style, and usually of a different texture from the rest of the cell; and, as has been explained while describing the ovary, they are generally called *placentæ*, though by some denominated *trophosperms*. In a solitary carpel the placenta is usually at the ventral suture, but, by the margins being occasionally introflexed, may be either in the centre of the fruit, or even at the dorsal suture; and therefore, in a plurilocular pericarp, it may be either at the axis of the fruit, or in the middle of each cell, or, when each cell is spuriously bilocular, may be even at the dorsal sutures; a one-celled pericarp, that is formed from a syncarpous ovary, must however have the placentas strictly parietal, and placed at the margins of each carpel. A plurilocular pericarp may present an anomalous appearance by abortion. Thus there may be a central placenta by the disappearance of the sides of the carpels, or the placenta may be parietal (or rather at the dorsal suture), by the abortion of the sides and introflexed margins. On the other hand, an unilocular fruit may appear bi- or multilocular, by the placenta projecting membranous expansions or spurious dissepiments, all which must be carefully studied while pronouncing on the affinities of different plants.

Sometimes the placenta presents small prolongations, to which the seeds are fixed, and which are termed *funiculi* or *podosperms* (fig. 127, *a*). They are very evident in leguminous plants (fig. 104), in *Cruciferae* (fig. 110), and many others. In some they are very short and thick, but are in others slender and filiform. When the placenta or the funiculus expands at its point of attachment to the seed into a cup-shaped body of greater or less dimensions, this is termed an *arillus*. In the nutmeg (fig. 126) this arillus is red and fleshy, and cut unequally, and is called a mace. In *Euonymus* it covers the seed nearly all round (fig. 127); in *Polygala* it constitutes a little crown scarcely visible, at the base of the seed. But arillæ must not be confounded with integument of the seed. Thus the apparent appendage of the seed in *Nepenthes* (fig. 128), and the fleshy covering in the jasmine, are actually portions of the testa. An arillus is never developed till after the impregnation of the ovulum.

Seed.

The fruit is formed of two parts, the pericarp and the seed. What we have already gone over belongs to the former; we now proceed to the latter.

The *seed* is that part of a perfect fruit which is found in the internal part of the pericarp, attached to the placenta, or to its process, the funiculus. Every seed arises from a fecundated ovule, and therefore a naked seed can only be said to exist in those rare cases in which we have found a naked ovulum. Its essential character is to include an organized body, which, under favourable circumstances, is developed, and becomes a plant similar to that from which the seed was obtained. This body is called the *embryo*.

The position of the seed is of equal importance with that of the ovule; but as the terms are the same, we will not here repeat them.

In the ripe seed, what was the base of the ovulum becomes the base of the seed, and is called the *hilum* or *umbilicus*; the expansion of the raphe at the base of the nucleus becomes the *chalaza*; and the foramen is then called the *micropyle* (fig. 129, *a*). The *testa* (fig. 130, *a*) or primine sac sometimes disappears, and in others becomes thick; the *tegmen* (fig. 130, *b*) becomes usually incorporated with the testa, although it also in some plants disappears, and the two are generally known under the name of *episperm*. De Candolle has, without considering the ovule, but only regarding the ripe seed, followed Richard, and viewed the episperm as but one coat, the outer surface of which he has termed the *spermoderm*, the inner, the *endopleura*, and the intermediate portion, chiefly constituted by the spreading vessels of the raphe, the *mesosperm*. But the terms testa, tegmen, and raphe, are much less exceptionable, as they exhibit a relation to the structure of the ovulum. In some plants, as we have already said, the testa is fleshy; in others it is attenuated (fig. 128) into a long process, both of which may be mistaken for an arillus if proper attention be not paid. In the cotton-plant the whole surface is covered with hair-like expansions, when the seed is said to be wrapt in wool; or such hairs may be merely placed at one or both ends, when they constitute a *coma*. In some plants there are tumours on the testa, near the hilum, or at its opposite end, called *strophilæ* or *carunculae* (fig. 131), the precise nature of which is unknown; but in some instances they appear to be dilata-tions of the chalaza, and in other cases they seem caused by a diseased state of the lips of the foramen or micropyle.

After impregnation, the nucleus undergoes great changes. The embryonic sac increases rapidly in every way, and often pushes back the cellular tissue or parenchyma of the nucleus, until this latter is reduced to a thin pellicle or membrane, and is ultimately filled with nothing but the embryo; in which case the membrane or sac itself either disappears entirely, or becomes incorporated with the parenchyma of the nucleus; and such plants are said to be destitute of *albumen*. In others, however, numerous globules are deposited on the inside of the sac, and these by their agglomeration constitute the *endosperm* (fig. 130, *c*), inclosed in which is the embryo (fig. 130, *d*). But the almost complete destruction of the parenchyma of the nucleus, and great development of the embryonic sac, does not always take place: for in some plants the sac is only enlarged sufficiently to contain the embryo, and the parenchyma is to be observed (fig. 130, *e*) in the ripe seed filled with globules of a starchy substance, and is thus converted into a body similar to the endosperm; but, from its different situation and mode of formation, is called by another name in order to distinguish it, viz. the *perisperm*. In a few plants both the endosperm and perisperm may be traced, as in the water-

ossology. lily. We adopt these terms in conformity with Brongniart; but we must observe that systematic writers use these words, as well as albumen, promiscuously. In common language these are applied to that body which is to be sometimes found between the embryo and the coats of the seed, and whose cellular substance is totally different from the organized embryo; but when botanists discovered, as in the water-lily, in the *Scitamineæ*, *Piperaceæ*, and some other tribes (fig. 132), not only the albumen, but a second body more immediately surrounding the embryo, they gave this the name of *vitellus* (Brown), or *sac to the embryo* (Lindley). Brown, however, afterwards showed that the vitellus was a kind of albumen, and that two kinds might exist in the same plant; and more lately Brongniart has suggested the propriety of employing expressions for each. Perhaps, on the whole, the term albumen, so generally adopted, might be used promiscuously for whichever is developed, and when it is necessary to distinguish both, to employ the terms endosperm and perisperm. We object to the use of the phrases vitellus, and sac to the embryo, because in many instances the albumen is entirely formed of this supposed sac or vitellus, and that if these words are to be adopted, they ought to be so constantly, and not in those cases only where both parts of the albumen are visible.¹

albumen. The nature of the albumen is of great importance: it is *farinaceous* in the grasses; *coriaceous* and almost *cartilaginous* in many umbelliferæ; *ruminated* when it is wrinkled by reason of prolongations of the coat of the seed into the folds of the albumen, as in the *Annonaceæ*; fleshy in most of the *Euphorbiaceæ*; *horny*, as in the coffee-bean; or thin and membranous, as in many *Labiataæ*.

Embryo. The embryo, as we have already said, is that organized body existing in the perfect seed after fecundation, which is destined to become a plant similar in all respects to the parent. It may either have or be without an albumen. When the albumen is present, and the embryo is applied to a point on its surface, it is said to be *external* (*exterior*); or if rolled round it, is *peripheric*. If shut up within the albumen, it is said to be *inclosed* (*inclusus*), and then may be either in the centre of the albumen (*centralis*), or not in the centre (*eccentricus*). Usually there is but one embryo in each seed; but plants occur in which there are more than one, as the *Allium fragrans*, mistletoe (fig. 133), &c.

As the embryo is already organized in the seed, and becomes a plant by mere development, so all the parts of the future plant must exist in it, although in a mere rudimentary state. It must, therefore, contain the rudiments of the root, of the stem, and of the leaves.

Radicle. This is the rudiment of the root (fig. 134, a), and by germination becomes a root. Such may either happen by the mere elongation of the exposed radicle, or by its bursting through a peculiar envelope, and protruding the root from within. Plants which have this cover to the radicle are termed *endorhizæ* (fig. 135, a), and those which

have none *exorhizæ*. Moreover, with very few exceptions, all exogenous plants are *Exorhizæ*, and the endogenous, *Endorhizæ*; so that the radicle indicates the future structure of the stem. The radicle is usually quite distinct from the albumen; but in *Cycadeæ* and *Coniferæ* there is an organic connection between them. Hence Richard has raised these orders to a distinct class, and called them *synorhizæ*.

The *neck* or *collum* is the line of separation between the radicle and the portion above it.

The *Plumule* (fig. 134, c), is what is destined to become the stem, and is therefore a rudimentary leaf-bud. It is by some divided into the *cauliculus*, or the portion between the radicle and the cotyledons, and the *gemma*, or that which is situated above the cotyledons. If, however, our idea of the plumule be correct, the cauliculus corresponds to the neck or collum, while the gemma is all that constitutes the true plumule. The plumule is often undistinguishable from the cotyledons, as in most of the exogenous plants that have albumen; while it is pretty evident in all exogenæ without albumen. Among the endogenæ the plumule is frequently rolled up in the cotyledon, and is not observable till after germination.

The *cotyledons* (fig. 134, b) are the primordial leaves of the plant; and as the plumule corresponds to a leaf-bud, so the cotyledons must be lateral, and situated at its base. We have already observed that in exogenæ the leaves towards the bottom of the plant have a tendency to be opposite, and in endogenæ alternate. In the embryo, then, where there can be but few leaves, we may naturally expect this disposition to be exact; and in fact it is so, exogenæ having opposite or verticillate cotyledons, and endogenæ alternate. In the former case they are usually two in number, whence exogenous plants are also called *dicotyledonous*; but sometimes there are more than two, as in the pine. These, however, being in a whorl, are mere modifications of the opposite cotyledons; and it has not been thought necessary to distinguish them from the dicotyledonous. When the cotyledons alternate, it is obvious that one only can be present at the base of the plumule; hence endogenous plants are called *monocotyledonous*. In some of these the first leaf of the plumule is at the same time slightly developed, whence botanists have supposed that some endogenæ have two cotyledons. Their alternating with each other will, however, completely distinguish them from the dicotyledonous plants. Sometimes the two cotyledons of the exogenæ are consolidated into one piece, as in *Lecythus*; in other plants, in which the leaves are reduced to mere scales, the cotyledons are also in a reduced state, and scarcely perceptible; but we have no right to infer, as some have done, that the embryo has none at all, or is acotyledonous. The cotyledons are erect, and placed close to each other, containing between them the plumule; they may be *fleshy* or *foliaceous*, *narrow* and *semicylindrical*, or *broad* and

¹ We have already stated Mirbel's view of the structure of the ovulum, and said that he has pointed out five distinct periods of development. In the first, the ovulum is scarcely perceptible, being a small pulpy conical substance, without a foramen. In the second, the exostome and endostome open, and they are to be perceived dilating insensibly until they have attained their maximum. The primine and secundine are manifest, as is also the terecine; but this only puts on the appearance of a round or conical cellular mass, of which the apex protrudes beyond the secundine. In the third period the primine and secundine, united together, increase much in size, have their double orifice closed, and consequently conceal the terecine, which becomes a membranous bag. In the fourth period the quartine arises from the internal surface of the nucleus, and the quintine is elongated into a narrow utricle attached by the one extremity to the point corresponding to the chalaza, and by the other to that near to the endostome. This is the period in which the ovule passes into the state of a seed. In the fifth period the quintine expands, the embryo exhibits the cotyledons as well as the radicle, and reaches its full size; and the substance of the albumen is formed either in the cells of the quintine, or in those of the quartine or terecine, when it is no longer possible to recognise the different envelopes of the ovule. These considerations of Mirbel, though apparently different, are in reality much the same as those of Brongniart, the quartine corresponding to the parenchyma of the embryo, and the quintine to the embryonic sac.

Glossology. *flat*; they may be *plane*, or *plicate*, or *conduplicate* (fig. 136), as in the cabbage, or *convolute* (fig. 139) or *wrinkled*; they may be *entire*, or *lobed*, or *divided*. They are said to be *hypogeous* when they remain under ground during germination; or *epigeous*, when, by an elongation of the collum, they rise out of the ground during that process, as in the bean.

Pl. CXIV.

Having thus explained these parts, we have to notice the direction of the embryo. It may be *straight* or *curved*. The radicle is the *base* of the embryo, and the summit of the cotyledon the *apex*. Now, as the hilum is the base of the seed, so, when the radicle points towards the hilum, the embryo has the same direction as the seed, and is said to be *homotropous*, and if at the same time it be straight, *orthotropous*; and when the cotyledons point to the hilum, it is inverted, or is called *antitropous*. When it assumes a horizontal direction, or lies across the seed, and has not the same direction with it, it is *heterotropous*. And, lastly, in a curved seed, both extremities of the embryo may be turned towards the hilum, and it has been then termed *amphitropous* (fig. 140); but this is a modification of the antitropous. It has been now discovered that the radicle, or base of the embryo, is always situated at the foramen of the ovule or micropyle of the seed, and that the other or cotyledonary extremity as invariably is directed towards the chalaza. If, then, the nucleus of the ovule have a contrary direction to the ovule itself, or if the micropyle be near the hilum, the embryo is homotropous; but if the nucleus be erect, or the micropyle be at the apex of the seed, it is antitropous; and if the micropyle be at the side of the seed, it is heterotropous. In a curved seed, where the micropyle and chalaza are brought nearly into contact, we have the amphitropous embryo.¹

The position of the hilum in regard to the radicle, or, as one may say, the direction of the embryo with respect to the seed, is called the *spermic* direction of the embryo, and is usually of great importance in defining most natural groups. Thus, in the horse-chestnut, where there are two seeds in each cell, of which the one is erect and the other inverted, or rather resupinate, the spermic direction of the embryo is the same in each. But in some tribes, as the *Proteaceæ*, the situation of the hilum on the seed appears to be variable; in which case we must resort to the *pericarpic* direction of the embryo, or its direction relatively to the fruit; and then, when it has the same direction as the fruit, it is *erect*, or the radicle is said to be *inferior*; and when it has an opposite direction, it is *inverted*, or the radicle is superior.

In a curved embryo, the relative position of the radicle and cotyledons is of great importance. Upon this De Candolle has founded his divisions of the cruciferae. When the radicle is so bent that it touches the back of one of the cotyledons, it is said to be *dorsal*, or the cotyledons *incumbent* (fig. 137). When it is applied to the edge or cleft of the cotyledons it is *lateral*, or the cotyledons are *adscumbent* (fig. 138). The same terms are analogically applied, even when the radicle is very slightly bent, but where, by a continuation of the bend, it might touch the back or edge of the cotyledons, as in the genus *Polygonum*.

Arrangement of the Organs of Reproduction.

All the organs of reproduction being modified leaves,

it might be expected that their relative position must follow the same law; but whatever be the causes of aberration, we know that such is seldom the case. Although the number of the parts of each verticil, as the calyx, corolla, &c. be usually the same as that of the leaves of the plant, yet every sixth real leaf is placed under the first in a quinary spiral, while in the flower the general rule is, that the sixth, or the first petal, is placed between the first and the second leaf of the spiral, or, in other words, the petals usually alternate with the sepals. In the same way the stamina alternate with the petals, or are opposite to the divisions of the calyx; and, lastly, the carpels alternate with the stamina, and are opposite to the petals. Such is the general disposition when the parts of the flower are definite and present; and even although at times there be a multiplicity of stamina and styles, these arise from two or more rows of the staminary and carpellary leaves being developed, and can scarcely be said to affect the rule; and hence this is called the *normal arrangement*, and the *symmetrical number*. But exceptions nevertheless do occur. Thus petals have been found placed before sepals, stamens before the petals, or carpels before the stamens, as well as various combinations of the opposite with the alternating system; but no plant is, we believe, known in which all the parts are opposite. One of the most remarkable states is where the calyx and corolla do alternate, while the carpels are placed opposite to the sepals, and alternate with the petals. Brown, upon whom no irregularity of structure, even the most trivial, is lost, has, from these anomalies, suggested that the full or *complete number* of parts in both the stamina and the carpels is equal to that of the divisions of the calyx and corolla taken conjointly. In the monocotyledonous plants the complete number is the most prevalent, while it is rare among the dicotyledonous. The full number may, however, be seen in decandrous and octandrous plants. Most of the leguminosæ exhibit the complete number of stamens, but all the pistilla are abortive but one. Many of the genera that have the symmetrical number exhibit sometimes glands, and sometimes imperfect stamens between the perfect ones, which tend to show the extreme accuracy of Mr Brown's suggestion. In distinguishing genera, or even orders, it is often of importance to examine whether the arrangement be normal or not.

But there is another point worthy of consideration, and that is the relative position of the parts of the calyx to the axis of inflorescence, or to the subtending bractea. That part which is next the bractea is said to be *anterior* or *inferior*, while the opposite portion is *superior* or *posterior*. Now, one of the segments of the calyx is usually posterior, and a petal anterior; but in a very few groups of plants this position is reversed. When the symmetrical arrangement takes place, one of the sepals is, we believe, always superior, and it is evident that one of the carpels must be therefore anterior; and when the complete number is to be observed, one carpel must be also anterior, whatever be the situation of the sepals. But what is remarkable is, that though all the carpels be reduced by abortion to unity, the solitary simple pistillum that is left is the one which was inferior; so that in every possible case where the pistils are reduced to one carpel, that one is situated next the bractea, and consequently has its placentiferous margin, which is next the axis of the flower, superior.

¹ Mirbel takes notice of an anomaly in the *Primulaceæ* and *Plantagineæ*, arising from the unequal development of the parts of the ovule. Here the primine sac or testa, in consequence of an extraordinary increase on the extensible side of the ovule, and a gradual contraction of the opposite one, has by degrees the exostome turned towards the chalaza, so that at last, as in other curved seeds, the two extremities coalesce; but the extensible side of the secundine, and even of the terecine or nucleus, soon ceases to increase with the corresponding side of the primine; so that the embryo, of which the radicle remained close to the summit of the internal envelopes, becomes stationary with the endostome, whilst the exostome has pursued its course and does not stop till it reaches the base of the ovule.

Glossology. The examination, then, of a simple solitary pistillum will thus, although we may have before us no more than a flower without the bractea, determine the anterior and posterior situation of the lobes of the calyx or sepals. In the same way, when the division of the flower is quinary, and the carpels are reduced to two, the one is usually anterior, and the other posterior; or the solitary carpel being anterior, the addition to it is posterior. The only exception to this with which Mr Brown (who first laid any stress upon it) appears to be acquainted, was in some genera of *Dilleniaceæ*. Martius, and following him Lindley, have distinguished *Gentianeæ* from their allies by the two carpels being placed right and left, and not anterior and posterior; but perhaps these able naturalists have not taken into due consideration the nature of the inflorescence and the consequent position of the bracteas. At present, therefore, we do not consider that tribe as an exception. In *Dilleniaceæ* even, if we understand rightly the structure of the order, the apparent exceptions are caused by peculiarities upon which it were improper here to enter, nay even imprudent, for no one in Europe has had the same opportunities of studying the group as the distinguished naturalist to whom we have alluded.

With regard to the number of parts in each whorl of the flowers, the symmetrical number is *five* among the dicotyledonous, or sometimes *four*, while in the monocotyledonous it is *three*. When, however, we consider that, on the one hand, there may be a reduction of parts, by the sepals, petals, stamina, and carpels, being much subject to abortion and union, and, on the other, an excess, either by multiplication, by more series than one of the same kind being developed, or by the combination of several flowers into one, we may easily conceive how few plants belong either to pentandria pentagynia, or to pentandria monogynia with a five-celled fruit.

Some botanists have supposed that the calyx and corolla form only one envelope; but this question seemed put to rest till the complete number of stamina and styles were found each equal to the conjunct number of both the floral coverings, when we have seen it revived. But we would suggest to those who may be inclined to adopt such an opinion, the difficulty of the case when petals are placed before the sepals. If these formed one envelope, then we must suppose the alternating petals abortive, and the apparent one a transformed stamen; and this supposition might be true if we *never* found a real stamen also opposite to the sepal and petal; but the *Berberideæ* form at once an exception. We are aware that such a difficulty might be partly overcome by viewing the calyx of the *Berberideæ* as a series of bracteolæ, so that we should have but one floral covering, and thus approach them to the *Laurineæ*; for, by the abortion of some stamens, there is nothing to prevent the others being opposite to the petal,

provided the petals were not also opposite to the sepals. **Glossology.** But we do not recollect that any one has placed the *Berberideæ* among the monochlamydeæ; and as for the theory Pl. CXV. in general, it has been permitted by common consent to be now almost forgotten.¹

CELLULAR PLANTS.

Having now at length explained the reproductive organs of vascular plants, we cannot pass over the *cellular*. In all these, as we have already said, there are no spiral vessels; and if, as we imagine, such are essential to the formation of a fecundating pollen, and of an embryo, we shall have no difficulty of denying to the whole class a real seed. Some botanists have insisted on the presence of male and female flowers; but if these do exist, they are in so very modified a state, so small, and so obscure, that all cellular plants have been invariably termed *cryptogamous* or *agamous*, in opposition to vascular plants, or those with spiral vessels in which there are flowers, and hence called *phanerogamous* or *phænogamous*, from their sexes being evident and well formed. From the imperfection of the pollen and ovula (allowing such to exist) no embryo is formed, and thus cellulares are by some called *arhizæ* (without a radicle), and by others *acotyledonous* (without cotyledons); both of these terms, however, from their allusion to an embryo, are, in our opinion, subject to criticism, so that those at one time adopted by Richard, of *embryonata* (with sexes, seeds, and embryo), and *exembryonata* (without sexes, without seeds, and without an embryo), for the two grand divisions of vegetables, are more strictly correct. But if cellular plants have no seeds, how are they reproduced? Linnæus has laid down the rule *omne vivum ex ovo*; but at that time the anatomical structure and physiology of the ovum was not so well understood; and there does not seem to be any doubt in the present day, that where spiral vessels are not present, a new individual may be formed by mere dilatation of some portion of the parent plant suited to the purpose, remotely similar to the multiplication of polypi in the animal kingdom, or even to spurious leaf-buds among vegetables. The portions thus capable of expansion have been by some termed *seeds*, from a general resemblance to true seeds, but are strictly called *sporules*. These sporules appear to give rise to a plant, in many cases, by elongating at some one point that seems to be only determined by contingent circumstances. In the ductulose cellular plants (we allude chiefly to those ferns with a rhizoma, for these alone have been examined with sufficient care) the sporule elongates into what at first has the appearance of a short club-shaped body (fig. 141) with two or three transverse darker coloured streaks. This, then, by degrees expands into a flat cellular and somewhat folia-

¹ Since the above was written, we have received a work by M. Dunal of Montpellier on the floral organs. This distinguished botanist considers that all the parts of a flower in its perfect state may be referred to three systems, which are respectively composed of several verticils or series in the following order, the divisions of each verticil constantly alternating with those of the preceding verticil. I. *Calycinal system*, and always sterile. Of this there are three verticils, the first being sometimes called exterior sepals; the second is often termed by botanists an outer calyx; the third is the calyx of authors, and within its segments, and opposite to them, and often adhering with them, are an equal number of scales or *lepalis* analogous to those in the next system, but which form only a part of this third verticil; and these scales cover the whole inside of the calyx in many achlamydeæ. II. *Male reproductive system*, or androecium. This is formed of two ranks, an exterior and interior. Of the former, the first verticil furnishes the petals, in the axils of which are found scales or *lepalis*, but both only form one series; the second verticil is of an equal number of parts, and alternate with them. The inner androecium has also two verticils. III. *Female reproductive system*, or gynoecium, consists likewise of two verticils, the first of which usually constitutes the fruit, and consequently has its divisions opposite to those of the calyx or third verticil of the calycinal system. Thus, the whole parts of the flower consist of nine series or verticils. The *lepalis* or stamens found in the axils of the petals or first verticil of the exterior androecium, as well as the real stamens, are often separated into several, or, as Dunal terms them, *choristate*, as in the almond. The fleshy disoid torus found in some plants he supposes to arise from the abortion of the inner androecium; a perigynous ring or disc, as in the *Santalaceæ*, he supposes to be formed by the union of the *lepalis* and filaments of the outer androecium. We shall not here enter into a discussion on the merits of this theory, which it is difficult to understand without a reference to M. Dunal's figures; but shall merely observe that it is exceedingly ingenious, and, if properly substantiated, may explain several anomalies in the structure of flowers hitherto involved in considerable obscurity.

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aceous substance (fig. 142), setting out radicular fibres from its margin; and these being now capable of deriving immediate nourishment from the earth, the body of the sporule disappears. This flat substance appears by elongation to become the rhizoma; for soon after it is fixed to the ground, it emits, from a point on its upper surface (fig. 143), a thread, which is afterwards the stipes and the leafy part of the plant. Mosses germinate nearly in the same way; the clavate, and as if articulated, body arises from the sporule, and then elongates, branches, and forms the radicular portion, from some part of which the stem (as it is called) is projected, bearing the leaves (See *Phascum serratum*, fig. 144). Many *Hepaticæ* germinate as the mosses. *Conferæ* (part of the *Algæ*) arise like the roots of mosses, and these fibres afterwards more or less unite together. Most lichens germinate like the ferns, the dilated filament becoming the frond. The *Fungi* have not been well observed in this respect; but it seems probable that, in the greater number, the whole mass is formed by the mere expansion of the sporule. How in all these orders the sporules are formed from the cells of the parent plant, and how they are endowed with the power of expansion, is a difficulty not easily solved; but this, as well as the investigation of the vivifying principle of the pollen on the embryo in vascular vegetables, is a subject purely physiological, and does not fall within our limits. We shall, however, merely state the only analogy, and it is a distant one, we can trace between these. Sporules are brought into life by coming into contact with external moisture, while the granules of pollen may be viewed as sporules that require to be fully shaped and fostered by the juices in the interior of the embryonic sac.

Equisetaceæ.

1. *Equisetaceæ*.—The stems, and often the principal branches, of this tribe, are terminated by an ovate or conical *spike*, or rather raceme (fig. 145), composed of several verticillated scales (fig. 146), which are pedicellate, peltate, and angular. From the under side of these scales several wedge-shaped *involucra* or *indusia* project downwards, and burst longitudinally on the side next the pedicel, and discharge a multitude of globules. These globules (fig. 147), when seen under the microscope, consist of a central green compact spherical body, furnished at its base with four elongated clavate filaments, slightly united by pairs of an elastic nature, so that when moist they twist spirally round the central portion, but when dry unroll and expand themselves, bearing on them many minute granules. The use of these parts is unknown. Hedwig supposed the central body to be a pistillum, and that each pair of elastic filaments formed one stamen, whose pollen was the granules. Brongniart, tracing in these plants a general resemblance to *Coniferæ* and *Cycadeæ*, presumes that the central body is a naked ovulum, and the filaments four grains of pollen united in pairs to its base. But although we admit either of these theories, we cannot regard the male organs as perfect; and the uniform structure of the supposed pistil or ovule militates against both hypotheses. Perhaps the central body may be viewed as a short seta or receptacle, analogous to that found in Ferns; the clavate filaments would then supply the place of a theca and annulus, while the minute granules would be sporules. This view is probable, if we consider each globule with the filaments as the result of a transformed frond.

Filices.

2. *Filices*.—The organs of reproduction, commonly called the *fructification*, of ferns, arise from veins either on the under surface of the frond, or at its margin. In some genera the frond, or a part of it, becomes deformed, and seems entirely covered by these organs. Each cluster of organs is called a *sorus* (fig. 148 and 149), and is sometimes protected by a membrane termed an *involucre* or

indusium (as in fig. 148), which is always attached to the veins. This indusium is said to be *plane* when it lies flat upon the sorus; or *peltate* when more or less circular, but depressed in its centre so as to form a kind of small pillar in the middle of the sorus; or *reniform* when it is the half of a peltate involucre, and thus resembling a half circle, attached by its centre on the one side of the sorus. It is *squamiform* or *scale-like* when it has the appearance of the scales of the frond. It may be *continuous* when the involucre of several sori are united into one uninterrupted line, and is *single* or *double* according as it extends from the vein on one or on both sides of the sorus. Thus a peltate involucre is double, and consists of two reniform ones. An involucre is usually *superior*, but is sometimes *inferior*, or placed under the sorus, and surrounds it. It may either open outward (*exterius dehiscens*) in an opposite direction to the midrib, or inwards (*interius dehiscens*) towards the midrib; and when it is inferior, may burst from the apex into *laciniae* or into two *valves*, or the upper part may disappear, leaving the lower cup-shaped (*involucrum pateriforme*). Sometimes the part of the vein to which the reproductive organs are attached is projected from the frond into the sorus, and is then called a *receptacle*. The sori may be fixed to the middle of a vein, or at its bifurcation, or at its extremity. They are *round*, or *linear*, or *reniform*, *distinct* or *confluent*, or *continuous*. They consist of groups of *capsules*; these, called more properly *thecæ* (fig. 149), are either pedicellate, with the stalk passing round them in the form of an elastic ring or *annulus*, or are sessile, and usually destitute of such a ring; the former are called *annulate*, the latter *exannulate*. These thecæ either burst open irregularly, or into two valves, or on the opposite side from the ring (fig. 150) when it is present. The sporules seem arranged without order in the interior. The sori may be considered as a group of fronds, the stalk of the theca as a modified stipes, the annulus as the midrib or rachis, and the theca itself as the transformed frondose portion. This highly probable view was first, we believe, suggested by Mr Lindley. Hedwig and others, who have wished to discover sexual organs among ferns, have been much puzzled, each having a different opinion, though none seems as yet worthy of notice.

3. *Marsiliaceæ*.—The fructification is situated at or very near the root or rhizoma; in one plant along the petiole of the frond or leaf. It consists of a somewhat globular *involucrum* (fig. 151 and 152), of a leathery or membranous texture. This, unlike the ferns, does not open, and is probably composed of a transformed frond, the veins of which give rise to one or more partitions; hence the involucre appears to have sometimes several cells. Attached to the veins or partitions are small bodies, apparently of two different kinds. Of these, in *Marsilea* (fig. 152), the one (fig. 153, *a*) is an oval-stalked theca, containing corpuscles, some large and roundish, others minute and angular. The other kind are very small bags filled with minute granules, and attached (fig. 153, *b*), several together, to the stalk of the theca. The theca, by the sexualists, has been considered a pistillum, and the bags as anthers. In *Pilularia* the structure is much the same, only the supposed anthers occupy the upper portion of the involucre, and the thecæ the lower. In *Salvinia* the anthers consist of grains, attached by long threads to a central column; in *Azolla* they are angular, and inserted upon a central body that occupies the upper half of the involucre, while the lower half is filled with a turbid fluid, and the thecæ are placed within a different involucre.

4. *Lycopodiaceæ*. Here the organs of reproduction are axillary or in spikes, and are composed of roundish

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lossology. *sules* or *thecæ*, that are from one to three celled, and one to three valved, or indehiscent; the thecæ are usually of two kinds, the one (fig. 154) containing a minute pulverulent matter (fig. 155, and magnified, fig. 156), and placed towards the upper ends of the shoots; the other (fig. 157) containing granules or corpuscles (fig. 157, a), of a much larger size, and situated on the lower parts of the shoots. In *Isoetes*, where the leaves are all radical, the outer leaves contain in their axils the granular, the inner the pulverulent organs. The pulverulent have been called by some *anthers*; the granular, *pistilla*. The latter certainly do germinate, but Willdenow asserts that the former do so likewise. Gärtner also supposes both to contain seeds or sporules, and that there is no difference of sex.

5. *Musci*. Here the organs are likewise of two kinds; the one, termed by Hedwig and many of his followers *anthers*, being cylindrical or fusiform stalked bags (fig. 158), that contain a pulverulent matter mixed with others that are empty and jointed; the other, *capsules* or *thecæ* (fig. 159, 160, 161, 162). These latter, when young, are seated on a *receptacle*, which, from its being occasionally provided at the base with several small leaves, called a *perichæcium*, may be viewed as a deformed termination of the stem or branch. This theca is protected by a more or less membranous substance, called a *calyptra* (fig. 160 a, 163 b), loose from the theca, but attached around its base to the receptacle (fig. 161 a); the calyptra has by some been considered a *style*. The capsule or theca, at first green and small, soon begins to swell, and becomes attenuated at the base (fig. 160 b, 163 c), into a *pedicel*, called a *seta*, which is often of considerable length; but in two genera, *Sphagnum* (fig. 168) and *Andræa* (fig. 161), is entirely wanting. By this attenuation of the theca, and formation of a seta, and by the increasing magnitude of the theca itself, the calyptra is torn from its attachment to the receptacle, and may be soon perceived resting on the upper part of the theca (fig. 160). When this in maturity is split up on the one side (fig. 160), it is said to be *dimidiate*, and if entire, or with several short clefts (fig. 164), *mitriform*; in some, as in *Splachnum* and its affinities, it remains entire for a considerable period, but afterwards splits and appears dimidiate, when it is difficult to say under which it ought to be arranged; but, notwithstanding, the nature of the calyptra is now acknowledged by all to be a good natural generic distinction. The surface of the calyptra may be *smooth*, or *striated*, or *sulcate* (*furrowed*), and may be *glabrous*, or *clothed* with hairs. In some polytricha there is in addition an outer hairy calyptra, but this is formed of abortive leaves entangled together, and scarcely attached to the inner and true one. Upon the removal or fall of the calyptra, the theca presents itself, sometimes *globose*, or *ovate*, or *oblong*. In some it is *straight*; in others, the one side is longer than the other, so that the theca inclines to one side, and is *drooping* or *cernuous*, which must not be confounded with a *pendulous* theca, caused by a curvature of the extremity of the seta. In a cernuous theca, the shorter or under side, instead of being uniformly contracted and smooth like the upper, has sometimes the contraction at one point at its base, and the protuberance thus caused is then called a *struma*. In all but *Andræa*, which has four valves (fig. 161), the theca is entire. Between the seta and the theca is often a fleshy expansion called *apophysis* (fig. 159 a), this always containing, at least when young, a pulpy mass, but no sporules, and being a mere dilatation of the top of the seta. The theca usually opens (fig. 162) horizontally near its apex; the upper part is called an *operculum* or

lid (fig. 162 a): in some genera, however, this lid does not separate from the theca (fig. 161 b), and does not even show any indication of the suture. The operculum is of various shapes, but the terms applied are common to other plants. "The *stoma*, or mouth of the theca, is either naked, as in *Gymnostomum* and *Hedwigia* (fig. 162); or generally furnished with a series of cilia called *teeth* (*dentes*), which may be either in a single series, as in *Splachnum*, *Grimmia*, and *Dicranum* (fig. 165); or in a compound or double series (fig. 166), as in *Hookeria*, *Hypnum*, and *Bryum*. In all mosses which possess a *peristomium*, it arises from the surface of the stoma, or springs from it within the margin and a little below the summit of the theca. In the latter case the teeth are generally more or less connected by a membrane, which not unfrequently rises to a level with the stoma, or even above it. Sometimes all vestiges of the teeth then disappear, thus presenting the aspect of a truly membranaceous peristome, as is seen in *Diphyscium* (fig. 167) and *Leplostomum*; and in such as have a double peristome of regular teeth, the inner one is formed by this membrane, split into a fixed number of attenuated segments. Sometimes, though rarely, the stoma is furnished with a dense horizontal *epiphragma*, not accompanied with teeth (as is the case with the *epiphragma* of *Polytrichum*), an instance of which occurs in *Lyellia*; or, what is still more curious, is supplied with a pencil of fine capillary cilia, as is exemplified in *Dawsonia*."¹ The number of teeth is always some multiple of four. Outside of the teeth, and between the edge of the theca and the operculum, is to be observed in some plants an elastic ring or *annulus* (fig. 165 a), the presence or absence of which, however, does not appear to be of great importance. "Within the theca (fig. 168 and 169), and attached to its sides and base by a cellular pulp intermingled with very slender filaments, is placed a membrane which forms a complete lining. Proceeding from the stoma or mouth downwards, it is continued to the base, when it is reflected upwards, forming a central column, till on a level with the mouth of the theca. This part has been generally denominated a *columella* (fig. 161, c), and is very different from the placenta in cotyledonous plants, to which it has been sometimes compared. A bag is thus formed between the columella, and that part of the same organ which lines the theca, in which the sporulæ are situated. The whole is closed by a very subtle membranous expansion, stretching between the summit of the lining and the columella, which (although in *Gymnostomum* it is often of a stronger texture), by the maturing of the theca, and separation of the operculum, lacerates, and in most instances becomes evanescent. On the open apex of the columella is fixed another membrane, more or less of a conical form, and of a somewhat different texture and colour, which by age often shrinks to the appearance of a mere lid to its orifice. Sometimes it is more rigid (as in *Splachnum*, *Tayloria*, and *Gymnostomum Donianum*), and is then not unfrequently called an *exserted columella*. It also in some cases adheres closely to the summit of the interior of the operculum (as in *Gymnostomum Heimii*, and *Hypnum dendroides*), which it raises or depresses according to the degree of dryness or humidity to which it is exposed. It is this part which we conceive to be the stigma of Palisot de Beauvois, but which we propose to designate by the more appropriate name of *opercular membrane*."² Mr Lindley has with great ingenuity lately suggested, that the calyptra may be understood as a convolute leaf, the operculum another, the peristome one or more whorls of

¹ Arn. and Grev. in *Mem. Wern. Soc.* vol. iv. p. 121.

² *Ibid.* vol. iv. p. 114.

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minute flat leaves, and the theca itself to be the excavated distended apex of the stalk, with which we agree; but he, in addition, supposes that the cellular substance of this dilated apex separates in the form of sporules, an hypothesis started by Richard,¹ and agreed in by Brown and Hooker. To this, however, there are, we conceive, many grand objections. As to the supposed anthers, whether the contained powder be imperfect pollen, or, as others say, a second kind of sporules, too little is yet known to render them even of use for the characters of genera. Meese asserts he saw them germinate like sporules; and Dr Roth presumes them to be analogous to the gemmæ, or buds of other plants formed by a superabundance of juices.

Hepaticæ.

6. *Hepaticæ*.—The reproductive organs are here of several kinds, but bear the strongest resemblance to those of the mosses. The theca is, however, destitute of an operculum. In *Jungermannia* (fig. 170) it splits into four longitudinal valves, and is supported by a delicate membranous peduncle or seta (*a*) arising from the frond; the whole, when very young, is moreover protected by a delicate calyptra (*b*); but this does not loosen its attachment to the receptacle or portion of the frond, but splits at the apex to permit the elongation of the seta. This calyptra is placed within another (fig. *c*) either single or double cover, less delicate, and more of the texture of the frond, which may be termed a volva, but is generally, though very improperly, called a calyx; and this, which is of different forms, however insufficient for a generic distinction, is admirably suited for specific characters. When the theca bursts, the sporules are found to be intermixed with elastic spiral filaments or elateres (fig. 170, *d*). But besides the theca, minute spherical cellular bodies have been discovered in many species; and these are supported by short stalks, and have been by some termed anthers. *Monoclea* (fig. 171) bears a very great resemblance to *jungermannia*; the volva is however less distinct, but the calyptra (corolla of some) is considerably elongated (*a*), and tubular. The theca is borne by a seta (*b*); it does not burst into four valves, but splits up on one side (*c*), and presents a central filiform body (*d*), called a columella, about which are the sporules, mixed with elateres (fig. 172). In *Targionia*, the volva arises from the under side of the frond, and of a texture between membranous and coriaceous, marked by a vertical prominent line, by which it separates into two valves: within this are several slender bodies, supposed by some to be anthers; and one spherical, covered by a calyptra, which bursts vertically. Within this, again, is the theca, upon so very short a stalk as not to be, when mature, protruded beyond the volva. The theca appears to burst irregularly, has no columella, and the sporules are mixed with elateres. In *Marchantia* (fig. 173), the volva (here called usually a common receptacle) is peltate (*a*) and on a stalk; it is either flat or conical, and bears on its under surface, not one calyptra, as in the other genera we have noticed, but several, each of which (fig. 174, *a*), bursting at its apex, that is, the point nearest the frond, discloses a theca (*b*), which opens by eight short teeth or valves, united below, and contains sporules and elateres. Other peltate volvas or receptacles, however, occur, having merely oblong bodies imbedded vertically in the disk, and conjectured to be anthers; and besides these there are sometimes little open cups, sessile on the upper surface of the frond, that contain minute gemmæ. *Fimbriaria* differs so very slightly from *Marchantia*, that we may pass it over. In *Anthoceros* (fig. 175) there appears to be no volva; the calyptra (often called a calyx) arises (*a*) from the frond, and is tu-

bular; the theca, supported by a stalk or seta, is linear, Glossology, and splits (*b*) into two valves exhibiting a central columella (*c*), to which the sporules are attached by means of Pl. CXV. very short straight filaments (fig. 176). There are no elateres. The structure of *Sphaerocarpus* is involved in some doubt. We have never had the opportunity of analysing good specimens, but the following seems, from a comparison of the different results of other botanists, to approach nearly to the truth. The whole upper surface of the frond is covered with ellipsoidal volvas (called in this genus *follicles* or *calyces*). These are truncated and perforated at the apex; they are said by some to split into two valves, but this arises from such botanists having only looked at Micheli's figure, in which they are represented cut open by the knife. The volva contains at the bottom a very few linear bodies, the supposed anthers, and one other, the theca, which becomes swollen and spherical, and filled with sporules, destitute of elateres, according to Micheli, though others of less note state that they are present; the calyptra, if present, is closely attached to the theca, and only indicated by a small point at its extremity. *Riccia* (fig. 177) has small excavations in the frond (fig. 178), in which the volva, often scarcely perceptible, rests, containing the theca and calyptra, similar to that of *Sphaerocarpus*: the sporules are unmixed with elateres. There is thus among the *Hepaticæ* such a variety among the organs of reproduction, that no common character is almost to be derived. "The most remarkable point of structure in these plants is the spiral filament, as it is called, lying among the sporules within the theca. This consists of a single fibre, or of two, twisted spirally in opposite directions, so as to cross each other, and contained within a very delicate transparent perishable tube. They have a strong elastic force, and have been supposed to be destined to aid in the dispersion of the sporules; a most inadequate end for so curious and unusual an apparatus."²

7. In the *Algæ*, the sporules, sometimes named granules, Algæ. are variously situated. In some they are contained in distinct capsules or thecæ (fig. 179); in others, in what are termed *tubercles* or *conceptacula* (fig. 180), which are either free or imbedded in the frond, or in a leafy process arising from it; or a multitude of these may be collected close together, into what is then called a common receptacle (fig. 181); and these receptacles in some assume the form of a pod (*siliqua*). The sporules or granules are also often naked, and immersed in the frond (fig. 182); or very rarely external, and surrounded by an open involucre (fig. 183). Sporules with and without a covering (theca or tubercle) frequently exist in the same species, but usually in different individuals. Some genera are tubular, and have the sporular matter scattered or arranged in some determinate manner in their interior (fig. 184); others are gelatinous (fig. 185), either wholly or portions of them, containing naked sporules, which are sometimes mixed with pellucid filaments, and sometimes arranged so as to form moniliform or beaded threads (fig. 186). We, along with Agardh, unite to the *Algæ* the *Characeæ* of authors; and in these there are two kinds of organs (fig. 187). The one (fig. 188) is a *nucule*, *capsule*, or *theca*, sessile, oval, solitary, and unilocular, of two membranes, of which the outer is remarkably thin and transparent, and is terminated by five teeth. The inner one is opaque, and of a thicker texture, and is formed of five narrow valves twisted spirally; the interior is filled with minute granules, but whether these be distinct sporules, or only parts of one large disintegrated sporule, is not yet determined; but each nucleus, on germinating, has been observed to give

¹ Bulliard, *Dict. Elem. Bot.* p. 67.

² Lindl. *Introd. Nat. Syst.* p. 325.

Glossology. rise to only one plant. The second kind of organs has been termed *globules*. Of these the external tunic is very pellucid and indehiscent; the inner seems formed of thin triangular scales, composed of radiating tubes, inclosing a coloured, spherical, pulverulent matter, and the interior of the globule is filled with a multitude of long, simple, crowded filaments, that are diaphanous, and marked with transverse striæ, as in *Oscillatoria* and *Lyngbya*. These filaments appear to be attached to the central portion of the inside of each scale. Smith has arranged *Chara* in monandria monogynia, conceiving the globule to be an anther, and the tubercle a germen, and the five teeth a five-lobed stigma; but the filaments of the supposed anther show the absurdity of such an hypothesis. Walroth asserts that the globules germinate.

Lichens. 8. *Lichens*.—The organs of reproduction (see fig. 189 and 190) are chiefly of one kind, termed *apothecia* or *shields*, or *partial receptacles*. These are formed by nuclei of the medullary substance usually bursting through the cortical portion, which is often raised up, and forms a cup or border round the nucleus; the *sporules* or *gongylæ* are contained in thecae or small membranous tubes, either simple, or composed of several placed end to end: these thecae in some lie free in the nucleus, but in others are previously collected into other cases, termed *asci*. The portion of the nucleus in which the thecae are inserted, by exposure to the air becomes usually harder, and of a somewhat cartilaginous nature, and then often separates from the apothecia. It is called *nucleus proligerus* if the whole of the nucleus becomes so, but *lamina prolifera* (fig. 191) is applied when only the upper stratum contains the thecae. The apothecia are either sessile on the thallus, or connected with it by a narrow neck or stalk called *podetium*. The podetia are in some species cup-shaped at the apex, and, instead of one, bear several apothecia on the margin. This cup is then termed a *scypha*, and the lichens *scyphiferous* (fig. 192). When the apothecia are long and linear, they are by some called *lirellæ*; and even a round apothecium may be formed by the plaiting or convolution of a lirella. In a few genera the *nucleus proligerus* is not protruded beyond the thallus, but is contained within it, merely presenting a small opening or *ostiole* (fig. 193, 194). Independent of the apothecium, there are other parts which appear to have the power of reproduction. These are called *soredia* when they contain a mass of free pulverulent bodies, usually of a whitish colour, that are scattered over various portions of the thallus; and *pulvinuli* when they resemble spongy or amorphous excrescences.

Fungi. 9. *Fungi*.—This tribe borders on the lichens so very closely, as that part of both have been separated into a distinct order called *Hypoxyla*, for which, however, there does not seem to be any necessity. Indeed Agardh remarks of many fungi, that if they had a thallus, they would be lichens. We have already said of them, that the whole plant may be considered as a mass of reproductive matter; and we shall therefore give as short a sketch of them as possible; but, on account of their diversity of structure, we shall be obliged to take them by groups. Brongniart regards the fungi as a class, and divides them into orders; but we are rather inclined to view them as one order, and will take Brongniart's sections, with a slight change of names, as sub-orders.

1. The first of these, and most nearly related to the lichens, are the *Hypoxyla*. Here the sporules are immersed in a hard and ligneous *receptacle* or *peridium*, which opens more or less regularly. Of these there are three tribes. 1. In the *Sphæriaceæ* (fig. 195) there is a terminal pore or cleft, by which the thecae escape in the form of a mucilage (fig. 196): 2. In *Phacidiaceæ* (fig. 197 and 198)

there are several clefts or valves, and the thecae remain fixed: 3. In *Cytisporææ* their orifice is round, but the sporules appear naked, and to have no thecae.

2. *Agaricoideæ*. Here the whole plant is somewhat fleshy or corky, and called a *receptacle*. It is partly covered by a membrane that bears the sporules, which are rarely naked, and scattered on it, but usually inclosed in membranous thecae, and inserted in it. There are three distinct tribes. 1. The *Agaracineæ* (fig. 199) have the membrane distinct, and limited to a particular part of the plant, with the sporules almost always inclosed in thecae, a sub-tribe of which, *Clavariæ*, has straight, club-shaped, simple, or branched receptacles, with the membrane covering nearly the whole; another, the *Agariceæ*, have a *pileus*, the lower surface of which contains the sporuliferous membrane constituting *lamellæ* or gills in *Agaricus*, and *tubes* in *Boletus*; and the *Helvellaceæ* have a pileus, with the membrane on its upper surface. 2. The *Tremellineæ* are soft and gelatinous, and of an irregular shape; they have no thecae, and the sporules are either scattered on the surface of the membrane, or issue from below it. 3. In the *Clethrineæ* (fig. 200) the sporules are mixed with a mucilaginous substance (the sporuliferous membrane), either inclosed in the cells, or on the surface of the plant which arises from a volva.

3. *Lycoperdaceæ*. Here the naked sporules, at least when young, are inclosed in firm, or vesicular, or filamentous thecae, that are again included in the interior of a peridium of a fleshy or membranous nature. 1. *Sclerotineæ* (fig. 201 and 202). This tribe has the peridium indehiscent, and filled with a compact cellular substance or agglutinated thecae, in which are the sporules very indistinct. 2. *Angiogastri* (fig. 203 and 204). Here the peridium, which opens sometimes by means of an operculum, incloses one or more secondary peridia or peridiola (or thecae, but by no means of a membranous nature, as in many other fungi) filled with sporules. 3. *Lycoperdineæ* (fig. 205, 206, 207, 208, 209, 210, 211), where the peridium is usually pedicellated and of a determinate shape, opening regularly, and inclosing the sporules, which soon burst from the thecae, having the appearance of numerous filaments mixed with the sporules. 4. *Fulgineæ* (fig. 212, 213), in which the peridium is sessile, irregular, readily decaying or crumbling into dust. The thecae are filamentous, few in number, and, as in the last, soon losing their sporules, which appear mixed with them.

4. *Mucedines*. In these there is no peridium, while the sporules are naked, and supported by filaments more or less branched and interwoven, in which it is probable they had been at some period contained in all the species. There are five tribes. 1. *Isariæ* (fig. 214 and 215), where the filaments are united one with another in a regular and constant manner, and have the sporules scattered on their surface. 2. *Byssaceæ* (fig. 216, 217, 218), where the filaments are distinct, though often entangled, opaque, without joints, and exhibiting the sporules on their exterior; or jointed, the joints breaking off and forming thecae containing sporules. In some genera of this tribe no sporules have been yet discovered, which has induced some distinguished botanists to suspect several of them to be imperfect states of other plants. 3. *Mucedineæ* (fig. 219, 220, 221). Here the filaments are distinct or loosely entangled, transparent, fugacious, and often articulated; and the sporules are included in the ultimate joints of the filaments, or in small lateral branches, which afterwards separate, or even in the interior of the filaments, without joints, from which they quickly escape, and appear scattered on their surface. 4. *Mucorineæ* (Plate CXVI. fig. 222, 223). The filaments here are transparent, jointed, fugacious, and inflated at their extremity into a mem-

Glossology.
Pl. CXV.

Glossology. branous vesicle, inclosing the sporules. 5. *Phyllerineæ* (224). Here the filaments are simple, without joints, and contain sporules which do not readily escape; they form tufts on the surface of living leaves, and not dead ones, as in most fungi.

5. *Uredaceæ*. In these the thecæ or sporidia are formed of short, continuous, or articulated filaments, which are either free, or supported on a very short and simple stalk, thus scarcely exhibiting the least trace of the filaments observable in the last sub-order. These sporidia spring from under the epidermis or its surface, of either living or dead plants, and are frequently surrounded by a false peridium, formed by the development of the epidermis, or supported on a fleshy or fibrous base, produced by the thickening of the parenchyma of the plant, upon which it is a parasite. There are four tribes. 1. *Stilbosporineæ* (fig. 225), where the sporidia are articulated, and arise from dead plants. 2. *Bactrideæ*. Here the sporidia are simple or unilocular, opaque, fixed or scattered, inclosing numerous extremely slender sporules, which escape towards maturity. This tribe, however, is scarcely either well understood or defined, and perhaps belongs to some other sub-order. 3. *Fusideæ* (fig. 226, 227), in which the sporidia are not jointed, are indehiscent, and spring from the epidermis of dead vegetables. 4. *Uredineæ* (fig. 228), where the sporidia are developed under the surface of the epidermis of living plants.

We have not given the above as a defined arrangement of fungi, but with the view of exhibiting the structure of each of the tribes into which it seems advisable, with some slight alterations, that this extensive order be divided. Much difficulty is often created to the student of these plants, by the diversity of terms to apparently the same thing. Thus, sporidia and thecæ each mean sporule cases; and, on the other hand, sporidia and sporules seem confounded. Hence in one tribe it is said, "though they are called sporidia, it rarely happens that the microscope is able to detect the included sporules; the student therefore must expect the sporidia to appear without sporules."¹ But we ourselves are by no means sure that in any instance do the sporules exist without thecæ. They may be at one time included in filaments, which serve them for thecæ, and must be viewed as filamentous thecæ more or less united to each other end to end; or they may be contained in the cells of the plant, the cellules thus being thecæ; or the thecæ may be so collected as to form a membrane;—but we do not conceive the apparently naked sporules of some species to be any proof of the original absence in them of sporule cases. In this way we think, also, the whole order may be considered in two ways, either as elementary or as compound bodies; the former including such as have no receptacle, and the whole plant constituted of filamentous thecæ; and the latter with a receptacle, in which light the peridium of the *Hypoxyla* and *Lycoperdaceæ* must be regarded. In studying the epiphyllous tribes with the intention of describing them, much attention ought to be paid, although almost entirely hitherto neglected, to the structure of the vegetable upon which the parasite grows; for colours, of great importance in discriminating the larger fungi, may be much influenced by the action of the juices of the plant on which it is formed, and can be here of little use; and even the shape of the peridium, and sorus or cluster of plants, must depend on the texture of the leaf from under the epidermis of which it springs, and through which it bursts. Parasitical fungi may thus, by growing on different plants, assume very different aspects both in colour and form;

and one cannot too much reprobate the manner in which at present many eminent mycologists describe as distinct species every different appearance that presents itself, without previously making themselves masters of the numerous laws by which cryptogamic plants are caused to vary.

Phy-
tography

We thus close what we had to say on Glossology. We have been more particular than we at first intended, in this department of botany; but it was absolutely necessary to give a lengthened view of the formation of the different parts, as well as the names applied respectively to each. For the Linnæan or artificial system such was not requisite; but the great difficulty as well as beauty of the natural system is to view plants analogically,—to consider them, not in their modified, but in their primitive state,—not in the imperfect state in which they appear to our eyes, but in that in which we should see them if fully developed; thus enabling us to exert our minds, and to trace affinities, of which the mere practical botanist can have no conception.

II.—PHYTOGRAPHY.

Under the head of Phytography, the first thing we have to notice is the

Nomenclature.

The necessity of some universally received name to each plant, and of some laws on the subject, has been acknowledged by every one who has made botany a study. Without such, every country would give a peculiar name, and the pursuit would thus become extremely intricate. This alone gives zoology and botany great advantages over mineralogy, in which not only is there no classification of genera and species according to the Linnæan rules, but every species receives a name according to the fancy of the describer, whether or not it has already received one from others.

To obviate such inconveniences, it was at first in use to give to a plant the common name by which it was known in Greece and Italy; but as the knowledge of vegetables extended, this was found to be almost impracticable, both because new plants unknown to the ancients were discovered, and because, from the prodigious number, no person could recollect them all. When, therefore, some resemblance between each other was observed, botanists began to say that one was a *second genus* or kind of such a plant, as *hali alterum genus*, or that it was a *smaller*, or a *yellow flowered* kind, as circumstances might be; and as the number of species augmented, these distinguishing phrases were of necessity made longer, so that, as we find sometimes in Plukenet, a name might consist of twenty words. The inability of the memory to recollect them struck Linnæus forcibly, till at length he proposed that the name of every plant should consist of two words; the one analogous to the name of a family among mankind, the other to the baptismal name of an individual; the former he called the generic, the last the specific. This ingenious method has been termed the *Linnæan nomenclature*, and has been admitted by almost all botanists ever since it was first published in 1753. By it, not only is the memory aided, and enabled to retain the names of many thousands of plants; but, by the same generic name being applied to such as have a certain affinity with each other, that name must suggest to the mind a relationship of which we could not otherwise have an idea. Two inconveniences, no doubt, attend this method; first, it holds out,

¹ Grev. *Flor. Ed.* p. xxv.

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from its simplicity, a temptation to a young botanist to acquire merely the names of plants, without knowing any thing of their character; secondly, from every botanist not viewing the affinity of a plant in the same way, it often happens that the same individual has been placed in different genera, and consequently may have possibly received four or five different generic names. Various plans have been proposed to remove these difficulties; but they have been each, one after another, abandoned.

species.

With regard to what is a species or genus, an order or a class, perhaps no two botanists of the present day are at one; and our limits do not permit us to investigate this point with the attention that some may think it merits. All that nature presents to our eyes consists of *individuals*; but when we assert that one individual is the same, or so similar to another that we think them the same, we give way to our own thoughts, for others may form a different opinion. At the same time many resemblances are so striking as to be obvious to almost all; and when these are confirmed by their seed producing others bearing the same resemblance, we have the idea of what is termed a species. A *species*, therefore, is a collection of all those individuals which have a greater resemblance between themselves than to other plants, and which may by fecundation, one by another, produce fertile individuals, which in their turn reproduce others; and by reversing this procedure, we may infer that all these have arisen at one time from one individual. *Varieties*, again, are departures from the common appearance of the species, and may arise from the seed growing in different climates, subjected to greater or less humidity or heat; or various other causes may be assigned, some of which seem even to produce a permanent effect on the plant, so that after several generations scarcely one seed will reproduce the type of the species. Some botanists most unadvisedly have amused themselves of late years by raising these to the rank of species; but "this eternal splitting of hairs is the bane of natural history, is unworthy of science, and its advocates will one day have to lament that they stood sponsors to such a spurious and equivocal offspring. One tithe of the sagacity they discover in the infinitesimal division of species, directed to other points, would pile up a mountain of knowledge for future use, and immortalize their own names, which, under this present puerile system, will perish with the ephemeral names they are imposing upon undistinguishable things."¹

For long it was considered that a *hybrid*, or cross between two species, could not reproduce a plant, or rather, we ought to say, perfect a seed capable of vegetation; and this test was considered of importance as to the limit of species. But it is now supposed to be of little or no use; the hybrid Pelargoniums, or cape-geraniums, perfecting seed, and multiplying as easily as the parent plants. These plants ought never to be acknowledged by botanical writers. They are contrary to nature, and ought not to be received into any system of nature. They are only fit to amuse the eye and taste of the vulgar and uninitiated. And even if a florist wishes to gain any credit, it were well that he sedulously observed from what the hybrid was obtained; and instead of giving to it an absurd name, as is too often the case, or even a name as if it were a species, he ought to give one that is compounded of those of the two parents. Linnæus, however, laid it down as a maxim, that no hybrid produced perfect seed; and he supported this by many proofs. Those naturalists, therefore, who still adhere to this law, are forced to draw the conclusion, that the supposed hybrid Pelargoniums and

heaths are mere cross variations of varieties of one species; but whichever be the true theory (and we ourselves, if our physiological ideas on the subject be correct, can see no cause why a perfecting hybrid may not be formed between any two plants which have the same anatomical structure of anthers and pistilla), whether these be hybrids or variations, no one has any right to expect space to be occupied by them in a botanical treatise. In so far only as they tend to improve our knowledge of anatomy and physiology, the man of science has to do with them.

Having formed some conception of a species, we may define a *genus* to be a collection of those species which have among themselves a more striking resemblance in their organs, than they have to the organs of others; it therefore bears the same relation towards species as a species does towards individuals. But as it is impossible for all the species of a genus to agree in every organ, so a selection must be made from those that may be considered of more importance than others. But no certain rule can be laid down, farther than that the organs of reproduction being found least liable to variation, are those alone admitted into a generic character. In some genera the stamens, in others the petals, calyx, pistilla, or the fruit, are found to be most convenient for the character; but upon the relative value of these, even in the same genus, different opinions are frequently entertained. A genus may therefore be limited by one in a different way from that adopted by another; and hence we cannot be surprised to find that one botanist places a species in one genus, others in another, according as each thinks it suits best with the collective character. A genus may be also divided into sections, according to some difference of structure in its organs; so that when this difference has been thought of importance, other botanists have raised each of the sections to be a new genus. Thus every day we find that plants, though still retaining their specific names, being married, as it were, into another house, receive new generic appellations. Such is no doubt of great disadvantage to the science, but is unavoidable, from the increasing number of known plants. Nor does it appear that the number of genera is increased in proportion to the discovery of new species. Thus Linnæus, by distributing 7540 species in 1260 genera, ranked on an average only six to each; but, notwithstanding the modern subdivisions in the catalogue of Persoon in 1807, there are about ten to each, and this only contains the phanerogamous vegetables; and in Steudel's *Nomenclator Botanicus*, published in 1821-24, there are of the phanerogamous 3376 genera, and 39,684 species, or about eleven to each; and if we add to these 557 genera, and 10,965 species of cryptogamia, we shall have an average of upwards of thirteen to each genus.

What has been said of genera is applicable to natural families or orders, these containing such genera as have a great resemblance to each other, and are either so closely connected that they cannot be removed, or are separated into groups only for the greater convenience of study. When, however, two or more of these orders bear a closer affinity respectively to each other than to the others to which they are also allied, it has been found useful to term them tribes of one order; but it is then difficult to distinguish between a compound order of this kind and a class. The number of genera in each order is of no importance. There may be hundreds, and there may be but one, solitary but forming a connection between other orders. In general, however, from the consideration that nature forms one continuous chain, we may ex-

¹ Loud. Mag. Nat. Hist. vol. iv. p. 65.

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pect that links remain to be discovered between such isolated genera and the others; and indeed, if the whole of nature were laid open to us, we might infer, notwithstanding all our present labours, that the machinery of orders and genera will be found entirely artificial, and existing only in our own conceptions. Not that it is of no value; for it is of the greatest use, to enable us to bring together in our mind plants resembling each other; and therefore that system must be preferred which tends most to this end.

Classes.

When several natural orders are collected together, having many similarities of structure and appearance, they form what are called *classes*. But very little has hitherto been done as to giving us a knowledge of these. The *Geraniaceæ* (as defined by S. Hilaire), *Rutaceæ* (as collected by Ad. Jussieu), *Tiliaceæ*, and some others, may be adduced as examples. But in botanical systems, where the order must be placed in a linear series, and cannot be described, each at their several points of connection, classes, unless in one or two instances, have been disregarded, and merely the constituent orders themselves introduced.

Language.

As it is essential to natural history that the nomenclature be universal, so it is indispensable that the names be written in some language adopted by all nations. The Greek has been rejected for many reasons, but particularly that the letters are so very different from those now used in the civilized world. To the Latin there are no objections; on the contrary, until within these very few years, it was the general language among scientific and learned men. The names, therefore, as well as the terms of the science of botany, are written in that language; and when such names and terms are translated to give them a more modern appearance, it appears advisable to adhere as much as possible to the Latin words by giving them an English termination. This however is often, but improperly, departed from. In framing names there is a maxim that is deservedly recognized, that they ought to be according to the rules of general grammar. Thus, if the name denotes a property, as thorny-fruited, it is not permitted to derive half of it from the Greek, while the other is Latin; *aculeatocarpa* cannot therefore be retained, but may be changed into *acanthocarpa*.

Priority
of name.

Priority of names must be strictly attended to, or, if names be changed, this must not be done in an arbitrary manner, and without good reasons. But while all agree to this, a difficulty is sometimes started as to what ought to give priority. And here we ought to observe that no manuscript one need be adopted. Farther, no mere name, though published, is of any consequence, unless accompanied by a sufficient character by which the plant may be recognized by others. Names, therefore, in a gardener's catalogue, are of no more importance than manuscript names, although, when made known to botanists by a distribution of specimens, politeness sometimes admits them; but the mere circulation of living plants among horticulturists and florists, not botanists, is not even entitled to this courtesy. Printed names, accompanying collections of dried plants, are always adopted by those who receive them; but it seems doubtful how far such might claim priority, if they were to be first described by others who had not an opportunity of seeing them. It has been argued that plates, without written characters, whether of genera or species, are sufficient to give a priority of name. But this cannot be admitted by the rules of common sense. In those few cases in which the figures of the plant are accompanied with admirably exact and minute dissections, this is sometimes permitted; but it even then

appears questionable, plates not being intended to characterize a species, but as auxiliaries to the character. A character may be sufficient without a plate, but a plate is of no use without a character.

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Generic names, giving the idea of a group, have been by all permitted to stand first, and then the specific name. For the same reason they ought to be substantives; *Mirabilis*, *Gloriosa*, and some others, being adjectives, may therefore be changed. No name ought to be allowed that gives a false idea of the character of the genus; but, on the other hand, such names are always to be preferred as express this character in a precise way; and as it is extremely difficult to express the whole character, the most remarkable points ought to be chosen as contrasted with other allied genera; care being taken that they apply to all the species of the genus. No generic name ought to be derived from the names of places; a few such, however, though faulty, have been admitted. Metaphorical names, derived from ancient history and mythology, have been sometimes bestowed on plants; but great care must then be taken that the allusion is perfect. Linnæus has succeeded very happily in one or two instances, particularly in that of *Andromeda*, his reasons for so naming which we shall give in the author's own words, from the *Flora Laponica*. Comparing her with the plant in question, he says, "virgo hæc lectissima pulcherrimaque collo superbit alto et vividissimo (*pedunculus*), cujus facies roseis suis labellis (*corolla*) vel optimum veneris fucum longe superat; juncea hæc in genua projecta pedibus alligata (*caulis inferior incumbens*), aqua (*vernali*) cincta, rupi (*monticulo*) adfixa, horribus draconibus (*amphibiis*) exposita, terram versus inclinat mœstam faciem (*florem*), innocentissimaque brachia (*ramos*) cælum versus erigit, meliori sede fatoque dignissima, donec gratissimus Perseus (*æstas*) monstris devictis, eam ex aqua eduxit e virgine factam fecundam matrem, quæ tum faciem (*fructum*) erectam extollit. Si Ovidio fabulam de *Andromeda* conscribenti hæc ante oculos posita fuisset planta, vix melius quadrarent attributa, qui more poetico ex humili tumultu produxisset Olympum."¹

The ancients were in the habit of giving plants the names of persons, and this custom has been retained; but care must be taken to select those celebrated in the science, or as having paid great attention to some branch of it. Thus their names will be engraved on our memory so long as the plants are known; and this honour has been therefore considered as one of the greatest that can be conferred on a naturalist. But this is liable to abuse, particularly when princes and others of rank are concerned; plants being often named after persons, who never in any way contributed to the advance of the study. To one person no more than one genus must be dedicated, however great be their services, for if this were to be allowed confusion would soon prevail; thus *Lessertia* and *Delesseria* cannot both remain. As a similarity of sound between two generic names is attended with bad effects, so it ought not to be tolerated, even in the case where we wish to honour a friend. Thus *Belis* cannot be suffered, there being a *Bellis*; nor *Cryphæa*, on account of a previous *Cryphia*; so neither can *Eschscholtzia*, nor *Koniga*, there being already an *Elsholtzia*, and *Koenigia*. When a person has different names, that must be preferred which is best known; but when such is pre-occupied, another may be selected. Great care ought to be taken to preserve rigidly the spelling of names, whatever be the pronunciation. Thus *Czackia* ought not to be written *Tschatschia*, nor *Grahamia*, *Græmia*; nor even is *Brunonia* strictly admissible, although this alteration was made because there

¹ Linn. *Fl. Lapp.* 2d edit. p. 131. See also Linnæus's *Lapland Tour*, vol. i. p. 183.

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was another Browne, to whom was dedicated the genus *Brownea*. Though by following this rule names be often given not entirely according with the genius of the Latin tongue; yet the end being to perpetuate a particular individual, if the proper orthography were not kept up, a pretext would soon be given for changing the name.

When it is found necessary to divide a genus into two or more, the old name ought to be retained for the group which includes the greater number of species, or to that for which the genus was originally constituted. The last is preferable, but *Erica* and *Ixia* both form exceptions, on account of the great inconvenience of changing the names of so many, when only one would remain unaltered.

As to generic names derived from the vernacular appellations of plants, botanists are not yet agreed. Linnæus, and others after him, wish to refuse all such, although they admit that they may be employed specifically: yet having laid down the rule, the genera *Thea*, *Coffea*, *Gincho*, &c. are almost universally admitted by them; and therefore, in the present day, these and similar ones are generally adopted if their sound be not too barbarous. Schreber, following the maxims of Linnæus, altered nearly all Aublet's names for the Guiana plants, which De Candolle and others now restore. However little desirable it may be to give these names, yet when once given and recognized, it can serve no good purpose, but lead to confusion, to change them.

The older botanists were in the practice of marking allied genera by analogous names, but with a change of termination; thus *Valeriana*, *Valerianella*; *Limonium*, *Limonistastrum*; *Bellis*, *Bellidoides*: all so similar were rejected by Linnæus, who allowed of comparative terms among species alone. As to the termination *oides*, it ought undoubtedly to be laid aside, being an adjective; but the same reason does not apply with equal force to the two other instances; and although we would prefer not to employ them in framing a name, we would hesitate about making a change if already given by others. An anagram, or transposition of the letters of an existing name, is quite contemptible and undignified, and can on no account be permitted. Hence *Galphimia*, made by Cavanilles, and derived from *Malpighia*, is quite unsuitable: in the same way Cassini has amused himself, to the detriment of the science, by splitting *Filago* into as many genera as he could form anagrams of that word, *Filago*, *Gifola*, *Ifloga*, *Logfia*, and *Ofliga*, than which nothing can be more absurd.

Specific
names.

Specific names are less difficult to establish than the generic, because they are meant to apply to an individual, and not collectively; and the chief consideration is not to give one already applied in the genus, or one that has no relation to the plant itself. Almost no change ought therefore to be tolerated, unless when one of these rules be broken through. Thus *Astragalus Monopessulanus*, though found not at Montpellier alone, but throughout all the south of Europe, and even in the western parts of Asia, cannot be altered, because it is actually found at Montpellier; and the name even tends to record the fact of its having been first observed there. But *Potentilla Monspeliaca* is a manifest absurdity, being a native of North America, and merits a change; thus also *Scilla Peruviana* is inadmissible, being a native of Portugal. *Lunaria annua* may also in the same way be changed to *L. biennis*, the plant being not annual, but biennial. There are some botanists, however, who even dislike a change for these reasons; contending, that while in the human race the name George, or Γεωργος, is not applied only to one who is a husbandman, so neither among plants ought we to care what be the name, provided it suffice to distinguish the species; but this is inept, for the above is not

a specific name, nor even that of a variety or variation: but the appellation of an individual.

In general the names derived from countries ought to be given with great circumspection; and from want of due consideration on that point, we have accordingly many absurdities. Thus *Linum Gallicum* is actually found in all the four quarters of the globe. *Ajuga Genevensis*, *Circea Lutetiana*, are not found at Geneva or at Paris alone, but throughout the rest of Europe; still they cannot be now altered. *Agave Americana* is not the only *Agave* found wild in America, for many inhabit also that country. Names taken from stations of plants, as *maritimum* or *palustre*, are frequently good; but such as *campestre*, *alpestre*, or *montanum*, being very indefinite, ought to be avoided as much as possible.

Specific names may be either substantives or adjectives. The former has been usually given when the plant had received a peculiar appellation from old botanists, as *Doria*, *Jacobæa*, *Farfara*; and then the initial letter must be a capital. A substantive is often used in the genitive case when a reference is made to some other genus, as *Pomme-reullia cornucopia*, and then the initial letter is small; or when it is named after some person, as *Ranunculus Gouani*, and then the letter is large. As to adjectives, they must agree in gender with the generic names, and ought to indicate something remarkable in the species. They ought always to commence by a small letter, but of late years botanists have got into a habit of employing a capital when the adjective is derived from the name of a place or person. Adjectives of colour ought to be used sparingly, because the colour of flowers is of very little importance to the species, the same often exhibiting two or more colours. Adjectives of size and qualities are preferable, although these are gradually rendered less applicable by the discovery of new species. Those taken from the agreeable aspect of certain flowers, as *pulcher*, *formosus*, or *amœnus*, are quite absurd, and ought never to be used. Names after botanists may either be substantives in the genitive case, or have an adjective termination. *Lycopodium Hookeri* is an example of the one, *Tulipa Celsiana* of the other.

Specific names may be taken from either Greek or Latin, but they ought to form one word; whence *pes-capræ*, *noli-tangere*, and still worse *noli-me-tangere*, ought never to have been given; and though some of these from courtesy may be permitted to stand, they are not to be imitated.

Varieties are usually indicated by the letters of the Names of Greek alphabet; but when they prove more than usually varieties. important, a name is attached to them similar to a specific name, as *Cratægus Aria longifolia*. Care ought, however, to be taken never to give such, unless the varieties be nearly as permanent as the species itself. Of late, however, by cultivation, so many varieties have been made, and each offering subvarieties or variations, that it were more dignified for botanical writers to omit them altogether, and hand them over for the amusement of florists and horticulturists.

By those who study the natural system, the names of Names of families, or *orders* and *tribes*, must be also attended to. orders. The former have been subjected at different times to different principles. Linnæus and others, seeking general and characteristical features, as in the *Umbelliferae*, *Cruciferae*, *Leguminosæ*, and *Labiatae*; and these, if they could be always obtained with accuracy, are preferable to any others. But even to the few that are admitted, exceptions are found; thus, in some *Umbelliferae* the umbel is so reduced as to appear no longer an umbel; and in some *Leguminosæ* the fruit resembles a nut. Jussieu and Adanson have therefore usually selected some genus, which is the type of the family, and derived the name from it, as *Rosaceæ*

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from the genus *Rosa*; and this method is now generally adopted. Care, however, must be taken that the genus be not only one of the best known and most numerous in species, but one which is to give an idea of the general aspect and structure. Thus *Bixineæ* is almost inadmissible, being derived from *Bixa*, a genus that rather forms a connecting link between the above order and the *Tiliaceæ*, and consequently improperly taken as the type. When once the genus is chosen, we must attend to the terminating syllables, for it would not do to adopt simply the plural, as *Rosæ*, without some change. The common way is to form an adjective ending in *ceæ*, or *ineæ*, as *Tiliaceæ*, *Ericineæ*; those in *oideæ*, meaning a family *analogous to*, and not a family *including*, are obviously to be rejected. Sometimes, when a difficulty is experienced in transforming the generic names into an adjective, some old well known name of the principal genus may be taken, as *Thymeæ*, *Salicariæ*, and then the termination may be the mere plural of the substantive.

When a family is divided into several remarkable groups, these also receive names in the same way as the orders themselves. But a difficulty is often experienced in bestowing names so as not to interfere with that of the family, and therefore a rule has of late been laid down, that the names of orders or families be made adjectives by prolonging the generic name one syllable, as *Ranunculus*, *Ranuncula-ceæ*, but that the names of tribes be formed of an adjective without prolongation, as *Ranunculus*, *Ranunculeæ*; and this law is now generally followed.

Synonyms.

If nomenclature be indispensable for communicating our ideas to others, synonyms, or a list of synonyms, are no less necessary for recognizing the name that ought to be preferred to every other, and for reading the works of older writers, or of those who lived before a systematic nomenclature was adopted. By this means we are enabled to have recourse at once to the different authors whom we ought to consult, and from whom we may derive instruction; and without such help we might spend days or weeks in seeking for the information we require, and, after all our labour, would not be able to impart it to others. The number of synonyms quoted must vary much, according to the size of the work. When there is sufficient room, not one ought to be omitted; but if, on the other hand, it be an elementary work within a narrow compass, only the principal synonyms need be brought forward; and under these we of course allude to the fullest descriptions, and best figures, that can be most readily consulted by the readers. A reference to the original describer of the species ought in almost no case to be omitted: thus, Linnæus, Bieberstien, Gunner, and Pallas, have each of them made a *Gentiana ciliata*; and it is important to the reader to know of whom the *G. ciliata* is. In quoting synonyms, very little attention is paid to accuracy; and the consequence is that more confusion is created than if all had been omitted. None indeed ought to be cited, unless the writer has the strongest reason for thinking himself correct, otherwise the reference must be made with doubt (?). De Candolle has recommended, and with great propriety, that, in every one which the author has had it in his power to verify by the inspection of an authentic specimen in an herbarium, the sign (!) be placed after the synonym, indicating that such are most worthy of attention, the others being supposed to be taken from descriptions, which, however good, are not to be always confided in. Old figures, being usually executed by artists not botanists, are of little use except to give a very general idea of the plant; and even among modern figures, when there is a difference, as often happens, between them and the description, greater reliance is to be placed on the latter than on the former.

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Botanical style is the art of characterizing and describing plants, so that they may be ascertained by others. Before Linnæus there were no fixed rules, each person adopting what to himself seemed best; but in reforming other points, that distinguished naturalist directed his attention also to this; and although, by following his views, one was restricted to a peculiar form of words, yet the advantages were very readily perceived, inasmuch as his plan put a stop at once to the many vague and insignificant descriptions which were too often indulged in by those of a flowery or poetical genius.

A character in natural history is that peculiar mark by which one being, or one collection of beings, may be distinguished from all others. When this is employed to distinguish a species, it is said to be *specific*; when belonging to a genus, *generic*; to an order, *ordinal*; and so on. The principal merit of characters is to bring together what can be most easily compared, and therefore such as are found in one and not in another are the best.

The characters of classes and orders are very different, according as an artificial or a natural arrangement has been adopted. In the former case they are very simple; in the latter, each being as it were one great genus, they must be still more extended than the character of a genus. Adanson and Linnæus, therefore, thought it impossible to give characters to a natural order; but they erred in seeking one by itself, and not a combination of several. Jussieu made the attempt, and the example or method which he set to others is still called the Jussieuan system, in opposition to the strictly artificial one founded by Linnæus. It is strange that the latter botanist, when he discovered that natural genera could not be defined in few words, did not apply the same train of thought to natural orders. Had he made the attempt, he must have succeeded, and another wreath would have been added to his crown, which has shed immortal honour on that of another. The characters of orders, when complete, must embrace a full description of all the organs of reproduction found in them; but as this is too long for common use, they are usually presented in a much abridged form. But even an abridged character may often be much shortened, and it is then called by Mr Lindley a diagnosis, comprehending only the distinctive characters of the orders, reduced to their briefest form, and without reference to the anomalies or exceptions which are often met with. For a character in full we may refer to *Cruciferae* in De Candolle's *Systema Regni Vegetabilis*, vol. ii. p. 139, which it is unnecessary here to cite. The abridged characters we shall have occasion ourselves to use.

The characters of genera vary also according to whether the artificial or the natural system be adopted. Linnæus, following the former, found the necessity of giving two kinds of character. The one, which he named the *essential*, contained no more than what was needful to distinguish the genus from others in the same order. The other, which he termed the *natural*, contained a short description of all the parts connected with the flower, and was necessary for the complete understanding of the genus; for without it one could not have the slightest idea of its true form, nature, appearance, or relations; and indeed his *Genera Plantarum*, written soon after his return from a visit to Jussieu at Paris, and containing natural characters, seems written in an entirely different spirit from that in which he had executed his *Species*. We do not mean that any improper inference should be drawn from this, but merely mention it as a very striking circumstance. In the natural system there is no occasion for these double characters; most of the lengthened character, as given by Linnæus, being contained in that of the order which in-

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cludes the genus. But, on the other hand, if a genus have a number of peculiar characters, every one must be mentioned; so that here the generic characters, though not so long as the natural ones of Linnæus, must almost always be a little longer than his essential characters. To the generic character ought to be added a short account of the fundamental organs, remarks on its natural affinities when necessary, or any of its peculiarities, and the derivation of the name.

Species.

Specific characters ought to be the same, whatever be the system; but in general, those who adopt the artificial content themselves with making them, as Linnæus prescribed, so very short as to contain only the distinctive marks, and on no account to exceed twelve words. Many of those who follow the natural method introduce as many of the peculiarities of the species as they can, so that it may exhibit a very short description. But, perhaps, without limiting ourselves to any particular number of words, it may always be preferable to make the specific characters, or *phrases* as they are called, as abridged as possible, without being indistinct, and then, when necessary, to add what may be denominated the natural character or description of the species. In this way it is advisable, as was recommended by Linnæus, that in the phrase, all that follows the name, when in Latin, should be in the ablative case; that it ought to be strictly comparative, and the more contradictory terms employed in two species the better; that the characters derived from the different organs should follow each other in a certain order, beginning with those that apply to most species of the genus, and ending with such as may be nearly peculiar to itself. There can therefore be no such phrase when there is but one species of a genus. *Descriptions* may be either abridged or complete. In the latter case they may contain an account of the root, stem, leaves, inflorescence, calyx, corolla, &c. in the order we have followed under Glossology. When in Latin, the nominative case is to be employed; after a substantive comes the epithets in adjectives or participles; but, for brevity, no connecting verbs are allowed, unless in very peculiar cases, where they cannot be dispensed with without creating great ambiguity. M. de St Hilaire, in a late report given in to the French Institute, on a work by M. Moquin on the family of *Chenopodiaceæ*, seems to think that when the characters of the genus have been given with care, specific descriptions are quite unnecessary. "Après avoir indiqué les caractères de cette tribu, M. Moquin décrit en termes techniques les plantes qui la composent. Il trace avec détail les caractères des genres et se borne pour les espèces à de simples phrases. Nous ne pouvons qu'applaudir à cette méthode. Les descriptions spécifiques complètes sont fort utiles, sans doute, dans plusieurs circonstances; mais lorsqu'un genre se compose de plantes régulières,—lorsque, dans des dissertations générales, on a soumis leurs organes à un examen scrupuleux,—nous pensons, avec un de nos savans confrères (M. de Cassini), qu'il est superflu de redire à peu près autant de fois les mêmes choses qu'on a des espèces à faire connaître." To this we subscribe in the case of a monograph, or of a system of plants, because then we have the opportunity of reforming the generic character to our own ideas; but in giving an account of a new or isolated species, we do not see that, for the satisfaction of other writers, a detailed description can be uniformly dispensed with.

With regard to species, the order usually followed is, first the name, then the specific character or phrase, next the

synonyms, then the locality or *habitat*, the duration of the plant, the time of flowering, &c.; after which the description may be given, with the culture and use; and, lastly, any critical observations that may present themselves.

We shall here give the following, as illustrations of the plates, and in some degree of what we have said.

GEN. I.—CALANDRINIA. KUNTH.

Cosmia, Domb. Juss.

Calyx of two persistent, concave, nearly equal sepals. *Petals* 3-5, hypogynous, equal. *Stamens* 4-15, inserted on the base of the calyx or petals; filaments free; anthers bilocular, opening longitudinally. *Ovary* superior or unilocular; ovules many, attached to the bottom of the ovary by linear podosperms. *Style* 1. *Stigma* clavato-capitate, tripartite. *Capsule* oblongo-elliptical, covered by the persistent calyx, unilocular, three-valved, many-seeded. *Seeds* lenticular; testa crustaceous, brittle; tegmen thin and membranaceous; embryo surrounding a farinaceous albumen.—Herbs succulent; leaves very entire, alternate in those with stems; peduncles one-flowred, axillary or opposite to the leaves, without bractæas; in those without a stem bibracteated.

1. *C. pilosiuscula*; stem nearly erect angled, and the leaves linear spatulate, slightly hairy; peduncles axillary, somewhat united to the bractea, constituting a terminal raceme; stamens 10-15.¹

C. pilosiuscula. De Cand. *Prod.* vol. iii. p. 359; Hook. and Arn. in *Botany of Beechey's Voyage*, p. 24.—*Talinum ciliatum*.—Hook. *Exot. Fl.* t. 82 (not Ruiz. and Pav.)—Tutuca. *Feuill. Chil.* vol. iii. t. 41.

Hab. Chili. ☉. Flowers during the whole of summer.

DESCR. *Stem* about a foot or a foot and a half high, erect or decumbent, weak, angular, reddish, and branched below, above greenish, scarcely, and only here and there pilose. *Leaves* scattered, from one and a half to three inches long, linear, frequently inclining to spatulate, acute, more or less patent, the extremities often recurved, the upper surface channelled, the lower subcarinate, especially near the base, the margin distinctly ciliated. *Flowers* at first in terminal leafy corymbs, at length racemose, of a bright purplish red colour, pedicellated. *Pedicels* about half an inch long, thickened upwards, subpilose at their base, which is decurrent, having a large leaf-like bractea, and near that generally another much smaller and appressed one. *Calyx* of two triangular, thickish, green, subpilose, waved leaflets, with their margins more or less incurved, which are erect in the bud, somewhat spread in the flower, and which at length persist, enlarge, and inclose the fruit. *Corolla* of five broadly ovate and slightly notched petals. *Stamens* from ten to fifteen in number. Filaments subulate, purplish, hairy, shorter than the petals. *Anthers* extrorse, ovate, bilocular, pale purplish. *Pollen* yellow. *Pistil* almost entirely surrounded and concealed by the stamens. *Ovary* roundish, green, glabrous. *Style* capitate, with three or four deep purple, velvety, obtuse, spreading rays or stigmas. *Capsule* ovate, inclosed in the calyx, opening with three obtuse valves. *Seeds* numerous, ovato-lenticular, dotted, black, shining, collected into the centre, and fixed to the base by as many distinct filaments, incrassated upwards, as there are seeds. *Embryo* cylindrical, curved, and inclosing the mealy albumen in its centre.

No particular culture is required for this plant. It is quite a hardy annual, and, like others of the same kind, may be sown in spring as soon as there is little probability

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¹ In Latin, *C. pilosiuscula*; caule suberecto angulato, foliisque lineari-spatulatis pilosiusculis, pedicellis axillaribus folio florali subadnatis racemum terminalem constituentibus, staminibus 10-15.

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of the germination being injured by the frost. It has been hitherto applied to no use either in medicine or the arts.

The genus belongs to Dodecandria monogynia of Linnaeus, and, like many others referred to it, has no certain number of stamens. This is even more exceptionable than some others, for the stamens are in several species as few as four or five, and, therefore, the artificial system entirely fails. In the natural method its place is obviously among the *Portulacæ*, and next to *Talinum*, with which some botanists unite it; but from that genus it is distinguished by the persistent petals (in *Talinum* deciduous), and ovules attached to the bottom of the ovary by long filiform funiculi (in *Talinum* fixed to a central placenta). As a species its nearest affinity is with *Talinum ciliatum*, Ruiz. and Pav., another species of *Calandrinia*, but there the stamens do not exceed five in number. The *Tal. adscendens*, Hort. Berol., seems identical, and even *Cal. compressa* may be a variety with fewer stamens.

Plate CXVI. *Calandrinia pilosiuscula*. Fig. 1, Plant, natural size. Fig. 2, Petal. Fig. 3, Calyx and stamens. Fig. 4, Stamen magnified. Fig. 5, Calyx and capsule. Fig. 6, Germen, style, stigma, and detached pollen, magnified. Fig. 7, Capsule burst open. Fig. 8, Cluster of seeds on their podosperms. Fig. 9, Seed and podosperm magnified. Fig. 10, Seed cut open longitudinally, exhibiting the embryo and albumen.

GEN. II.—VIOLA. TOURN.

Sepals five, auricled at their base. *Petals* unequal, the lower one spurred. *Stamens* five, approximated; filaments distinct; anthers connate; the two lower ones with processes at their back. *Capsule* one-celled, three-valved, opening elastically.—Herbs for the most part perennial, very rarely annual, some with a very short stem, others caulescent, and even suffruticose; leaves alternate; peduncles solitary, axillary, one-flowered, bibracteolate; flowers cernuous.

Sect. *Leptidium*.

Stigma resembling a proboscis, with a minute foramen at the apex; style flexuose.

1. *V. hederacea*; stem short, stoloniferous; leaves fasciculate, reniform, slightly toothed, on long petioles; stipules subulate; sepals scarcely produced at the base; lower petal, oval, bifid, gibbous at the base beneath.

V. hederacea. La Bill. *Fl. Nov. Holl.* vol. i. p. 66, t. 91; De Cand. *Prod.* vol. i. p. 305; Hook. *Exot. Flor.* t. 225.

Hab. New Holland. 24. Flowers in May in the greenhouse.

DESCR. Glabrous. *Stem*, or point from which the leaves spring, scarcely any, and apparently constituted by the united bases of the petioles throwing out long filiform stolones, which again produce clusters of leaves at various distances, and always at the base of each cluster send forth a rather strong fibrous branching root. *Leaves* fasciculated, from 3-6 in a cluster, an inch broad, when young almost cuneate and their sides rolled inwards, afterwards reniform and plane, or even convex on the upper surface, obscurely nerved, the margin denticulated, placed upon slender grooved petioles from two to four inches long. *Peduncles* or scapes from the axils of the leaves erect, longer than the leaves, with an indistinct groove, and two subulate bracteas near the middle. *Calyx* shorter than the corolla, cut into five spreading, ovato-lanceolate segments, scarcely at all produced at the base. *Flowers* scentless, purple, marked with deeper stains, white at the tips. Two upper petals reflexed; two lateral ones obliquely twisted, gibbous or bulging near the base, and pubescent; lower petal oval, bifid, striated, the base

gibbous only on the under side, convex on the upper, green, with a white margin. *Stamens* five; anthers nearly sessile, large, yellow-brown, appendaged at the extremity. *Ovary* obovate. *Style* one, bent at the base, filiform. *Stigma* white, tapering from the style, acute. *Capsule* oval, three-valved, loculicidal; placenta parietal. *Seeds* numerous, with a raphe conspicuous from without. *Albumen* fleshy, white. *Embryo* in the axis of the albumen, straight, orthotropical, or with the radicle pointing to the base of the seed.

This plant succeeds well in the greenhouse. Its use is unknown.

Although placed in the genus *Viola*, this species differs from the others by the scarcely auricled bases of the sepals, as well as by the absence of a decided spur. *Viola* belongs to Pentandria monogynia, and is the type of the order *Violaceæ*.

Plate CXVII. *Viola hederacea*. Fig. 1, Plant, natural size. Fig. 2, Back view of the calyx. Fig. 3, Lower petal. Fig. 4, One of the upper petals. Fig. 5, One of the side petals. Fig. 6, Side view of the lower petal. Fig. 7, Back view of a stamen. Fig. 8, Front view of the same. Fig. 9, Stipule. Fig. 10, Flower, the petals being removed. Fig. 11, Pistil. Fig. 12, Capsule, natural size. Fig. 13, Capsule burst open, magnified. Fig. 14, Seed, magnified. Fig. 15, Seed cut open to show the embryo and albumen.

GEN. III.—LOASA. ADANS.

Calyx tube adhering with the ovary, the limb persistent, 5-parted, equal. *Petals* 5, alternating with the calycine lobes, shortly unguiculate, concave. *Scales* 5, petaloid, alternate with the petals, 2-3-lobed, converging into a cone, and furnished within at the base with two sterile filaments. *Stamens* numerous, the 10 exterior sterile, the rest arranged in bundles, 10 to 17 together, each androphore opposite a petal. Anthers erect, bilocular. *Style* trifid at the apex. *Capsule* turbinato-oblong, 1-celled, 3-valved at the apex, and crowned with the calyx, the valves bearing the placentas at their margins. *Seeds* oval, very numerous, reticulated.—Herbaceous, branched, sometimes twining, for the most part covered with sharp stinging hairs; leaves alternate or opposite, toothed or lobed; peduncles opposite to the leaves, axillary or terminal, one-flowered; petals yellow, rarely white.

1. *L. nitida*; hispid; leaves opposite, cordate at the base, 5-7-lobed, lobes angled and toothed, upper ones sessile; peduncles axillary; lobes of the calyx oblong, acuminate, entire, equal in length to the petals.

L. nitida. Lam. *Dict.* vol. iii. p. 581; Willd. *Sp. Pl.* vol. ii. p. 1177; Juss. in *Ann. du Mus.* vol. v. p. 25, t. 2, f. 2; Tratt. *Tabul.* i. t. 23; Hook. *Exot. Fl.* t. 83; Bot. Mag. t. 2372; De Cand. *Prod.* vol. iii. p. 341; Pers. *Syn. Pl.* vol. ii. p. 71.

Hab. Chili. ☉.

DESCR. *Stem* straggling, weak, succulent, and fragile, two or three feet high, branched in a dichotomous manner, and, as well as the whole plant, clothed with longish hairs (which appear, when seen under a microscope, to be jointed, and to have short reflexed bristles), and still larger hairs or stings, seated upon a swollen sac or bag of poison, similar to what is seen in the stings of the common nettle. *Leaves* all opposite, somewhat five or seven lobed, with the lobes angular and toothed; the lower ones much the largest, placed on long foot-stalks; the upper ones sessile, smaller, and less distinctly lobed. *Flowers* axillary, generally solitary, pedunculated. *Peduncles* at first erect, after flowering bent down, swelling upwards into the pyriform ovary. *Calyx* cut into five, rarely four, deep segments, lanceolate, acute, green, hispid, at first

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patent, afterwards reflexed. *Corolla* of five, bright yellow, subunguiculate, concavo-ventricose petals, reddish at the base, waved at the margin, at first spreading, then bent back. *Crown* of five broadly ovate scales, red below, white upwards, where there are two slight depressions, and bidentate, somewhat pubescent at the base, where there are three (one on each side and one in the middle) subtriangular, toothed, red, fleshy appendages, each at its upper margin furnished with a yellowish brown, clavate filament. On the posterior side the margins of these scales are seen to be curved in, and to contain two filamentose bodies, curved and slightly pubescent at the base, about equal in length to the scale, and bearing on one side a purplish filament, which exceeds the scale in height. *Stamens*, about ten in each androphore or bundle; at first bent down at an angle, and concealed within the concave petals of the corolla, at length gradually springing upwards, and lying against the style and stigma, between the scales of the nectary. *Filaments* purplish. *Anthers* yellow, ovate. *Pollen* oblong when dry, spherical when moist, and always marked with a central line. *Ovarium* cohering with the tube of the calyx, above which it rises and forms an hemispherical hairy head. *Capsule*, with the persistent calyx, opening into three valves in the superior extremity. *Receptacles* corresponding with the sutures, rather large, fleshy. *Seeds*, several on each receptacle, longish, oblong, attached on one side, wrinkled, brown. *Albumen* white, between waxy and horny, and inclosing in its centre a cylindrical straight embryo, slightly thickened upwards.

This belongs to Polyadelphia polyandria of Linnæus, although by some erroneously placed in Polyandria monogynia, and forms the type of the natural order *Loaseæ*.

Plate CXVIII. *Loasa nitida*. Fig. 1, *Plant*, natural size. Fig. 2, *A Leaf*. Fig. 3, *A Flower*. Fig. 4, *Calyx*, most of the petals, stamens, and scales, being removed. Fig. 5, *Back view of the scale of the nectary*. Fig. 6, *Front view of the same*. Fig. 7, *One of the filaments from within the scale*. Fig. 8, *Stamen*. Fig. 9, *Pollen*. Fig. 10, *Sting*. Fig. 11, *Hair, with its joints and bristles*. Fig. 12, *Ovarium cut through transversely*. Fig. 13, *Seed*. Fig. 14, *Section of the seed, showing the albumen and embryo*. Fig. 15, *Embryo removed from the seed*.

GEN. IV.—BEGONIA. LINN.

Monœcious. **MALES.** *Perianth* usually of four unequal tepals. *Stamens* eight or more. **FEM.** *Perianth*, the tube adherent with the ovary, the limb divided to the base into 4-9 segments, usually unequal. *Styles* three, each with a two-horned stigma; or nine, dichotomously 3-4 cleft, with simple stigmas. *Capsule* triangular, three-winged, three-celled. *Seeds* very minute and numerous.

1. *B. picta*; stem short, pubescent; leaves cordate, acute, wrinkled, doubly-serrated, spotted, hispid; male flowers of four, the female of 4-5 divisions, the two inner the narrowest; capsule with the wings unequal and pubescent.

B. picta. Smith, *Ex. Bot.* t. 101; Hook. *Ex. Fl.* t. 89; *Bot. Mag.* t. 2962; Lodd. *Bot. Cab.* t. 571.—*B. hirta*. Wallich.

Hab. Nipal. 4. Flowers, in September, in the stoves of our gardens.

DESCR. *Root* perennial, of two small, roundish tubers, together with a few thick, fleshy, simple fibres, mixed with others which are more slender and branched. *Stem* short, slightly branched, thick, succulent, green, more or less tinged with purple, hairy. *Leaves* three or four inches in length, few in number, cordate, more or less inequilateral, with a deep sinus at the base, and two large rounded lobes, more or less acute, sometimes acuminate, the mar-

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gins unequally and doubly serrated, rugose, waved, hispid above, downy, and prominently veined beneath, green at the margins, and axils of the veins stained with dark purple. *Petioles* long, terete, hairy, with a pair of broadly ovate stipules at the base. *Peduncles* from the axils of the leaves, and longer than them, reddish below, green above, bearing one or several flowers, often in a trichotomous umbel. *Flowers* large, rose-coloured, drooping before and after expansion, especially the female. **MALE FLOWER** of four spreading *tepals*, two large, roundish, cordate, hispid, with short red hairs at the back, two inner ones obovate. *Stamens* numerous, and in reality monodelphous, the filaments often forked, yellow. **FEMALE FLOWERS** of four or five divisions; the outer ones rotundato-ovate, hispid at the back; the inner rather smaller, and obovate. *Ovarium* large, cohering with the tube of the perianth, turbinate, thickly pubescent, with branched or rather lacinated, white, reticulated processes, triquetrous, the angles extended into alæ or wings, of which one is larger than the others. *Styles* 3, yellow. *Stigma* bifid, each segment twisted something like the shell of a snail.

We have given a short generic character to this plant, as *Begonia* is the only genus of the natural order to which it belongs, and the description of the order will be given afterwards. In the Linnæan system it is usually placed in Monœcia polyandria.

Plate CXVIII. *Begonia picta*. Fig. 1*, *Plant*, natural size. Fig. 2*, *Style and stigma*. Fig. 3*, *One of the processes of the ovarium which forms the pubescence*. Fig. 4*, *Ovarium cut transversely*.

GEN. V.—CUSCUTA. LINN.

Calyx 4-5-cleft. *Corolla* urceolate or campanulate, the limb 4-5-cleft, with as many scales (sometimes very minute) inside at the base. *Stamens* 4-5. *Ovarium* bilocular, each cell two-seeded. *Stigmas* two. *Capsule* opening transversely. *Cotyledons* inconspicuous.—Parasitical, climbing, leafless plants with filiform stems.

1. *C. verrucosa*; flowers pedicellate; corolla campanulate, five-toothed, segments reflexed, scales fimbriated; stamens five; stigmas nearly sessile, diverging, elongated, subulate; peduncles and calyx verrucose.

C. verrucosa. Sweet, *Brit. Fl. Gard.* t. 6.—*C. reflexa*, var. *verrucosa*. Hook. *Exot. Fl.* t. 150.

Hab. East India. 4. Flowers in November in cultivation at Edinburgh.

DESCR. *Stem* of great length, filiform, branched, leafless, succulent, climbing from right to left (contrary to the motion of the sun), shining, glabrous, greenish-white, spotted and dashed with purple, adhering parasitically by means of small, fleshy, discoid radicles. From various parts of the stems and branches proceed racemes or compact panicles, formed of a considerable number of large, pure white, waxy, and slightly pellucid fragrant flowers, the smell of which resembles that of the primrose. *Peduncles* and *pedicels* sprinkled with many elevated shining dots or warts, of a deep purple colour. *Bractæas*, two or three on the pedicels, or at the base of the calyx, small ovate. *Calyx* of five fleshy, white or pale rose coloured, ovate, obtuse, appressed, warted segments, persistent. *Corolla* deciduous, campanulate, or very slightly contracted at the mouth, five-toothed, the teeth reflexed; at the base of the corolla, on the inside, alternating with its teeth, are five short fringed scales. *Anthers* five, sessile on the corolla, just within its mouth, and alternating with the segments, oblong, yellow. *Filament* incorporated with the corolla, forming an elevated line between the anthers and the back of each scale. *Ovarium* roundish-ovate, superior, and not at all adherent with the calyx, bilocular; each cell

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with two ovules, tipped with the two, nearly sessile, subulate, white *stigmata*. *Capsule* the size of a pea, terminated with the style and stigmas, spherical, membranaceous, opening transversely near the base, imperfectly two-celled; the dissepiment membranaceous, free, each cell two-seeded; one or sometimes both seeds in a cell not unfrequently abortive. *Seeds* attached to the base of the cells, erect, roundish, compressed. *Albumen* copious, between fleshy and corneous. *Embryo* filiform, long, spirally rolled up, and immersed in the albumen, as in fig. 8, where only portions of it are visible.

This grows with great luxuriance when plunged in the tan-pit. It is of no use.

This genus has been usually described as having no cotyledons; but, however inconspicuous they be, we are not warranted by analogy to draw such a conclusion: both bractees and a calyx are perceptible, and these we know to be modified leaves. Although, therefore, leaves and cotyledons do not appear perfect, we may infer that they exist in a rudimentary state. It belongs to Pentandria digynia, and Nat. Order, *Convolvulaceæ*. As a species, it coincides perhaps too closely with the *C. reflexa* of Dr Roxburgh, but that species has smaller flowers, and the calyx and peduncle have not been observed to possess the remarkable warts of that before us.

Plate CXIX. *Cuscuta verrucosa*. Fig. 1, *Plant*, natural size. Fig. 2, *Corolla cut open, showing the stamens and scales at the base*, magnified. Fig. 3, *Calyx and pistil*, magnified. Fig. 4, *Capsule opening*. Fig. 5, *Dissepiment and two seeds, the upper part of the capsule being removed*. Fig. 6, *Ovarium cut transversely*. Fig. 7, *Seed*. Fig. 8, *Seed cut longitudinally, showing the albumen, and the embryo rolled up and immersed in it*.

GEN. VI.—MYRISTICA. LINN.

Diœcious. MALES. *Perianth* campanulate, trifid. *Filament* columnar. *Anthers* 3-12, connate. FEM. *Perianth* campanulate, trifid, deciduous. *Style* 0. *Stigmas* two. *Drupe* with a nut covered by an arillus, one-seeded.

1. *M. officinalis*; leaves oblongo-elliptical, subacuminatæ, glabrous, paler beneath, nerves simple; peduncles few-flowered; perianth urceolate.

M. officinalis. Linn. *Supp.* p. 265; Gært. *de Fruct.* vol. i. p. 194, t. 41; Smith in *Rees' Cycl.*; Hook. *Exot. Fl.* t. 155, 156; *Bot. Mag.* t. 2756, 2757.—*M. moschata*. Thunb. in *Act. Holm.* 1782, p. 45; Wood's *Med. Bot.* t. 134; Willd. *Sp. Pl.* vol. iv. p. 869; *Ait. Hort.* Kew ed. 2. vol. v. p. 419; Spreng. *Syst. Veg.* vol. iii. p. 64; *Flora Med.* vol. ii. p. 74.—*M. aromatica*. Lam. *Act. Par.* 1788, p. 155, t. 5, 6, 7; Lam. *Dict.* vol. iv. p. 385, and *Ill.* t. 832; Roxb. *Pl. of Corom.* vol. iii. t. 267.—*Nux myristica* seu *Pala*, Rumph. *Herb. Amb.* vol. iii. p. 14, t. 4.—*Nux moschata*, fructu rotundo. *Pluk. Phyt.* t. 219.

Hab. Islands of Banda, a group of the Molucca isles. 5.

DESCR. *Trunk* from twenty-five to thirty feet, much branched, with a greyish brown, tolerably smooth bark, that abounds in a yellow juice. *Leaves* 3-6 inches long sub-bifarious, penninerved, oblong, or nearly elliptical, somewhat obtuse at the base, acuminate at the apex, quite entire, glabrous, dark green, and somewhat shining above, beneath much paler, but neither pulverulent nor pubescent; lateral nerves parallel, simple, prominent. *Petioles* $\frac{1}{2}$ – $\frac{3}{4}$ of an inch in length, plane above. *Flowers* in axillary subumbellate ra-

ces, sometimes forked or compound, males and females on different trees. *Peduncles* and *pedicels* subclavate, glabrous, the latter having a quickly deciduous bracteole at its summit, often appressed to the flower. MALE FLOWERS from three to five, or more, on a peduncle. *Perianth* urceolate, thick and fleshy, of a dingy pale yellowish colour, clothed with a very indistinct reddish pubescence, cut into three, or by luxuriance, and rarely, into four, somewhat erect teeth. *Filaments* of the *stamens* united and incorporated so as to form a thickened, whitish, cylindrical body, about as long as the perianth, of which the top is rounded, and the upper half covered by about eleven longitudinal, linear oblong, two-celled *anthers*, free at their base, opening longitudinally, and emitting a yellow pollen. FEM. FL., similar to the male, except that the pedicel is very frequently solitary on the peduncle. *Perianth* deciduous. *Pistil* solitary, shorter than the perianth, broadly ovate, a little tapering upwards into a short *style*, and bearing a two-lobed persistent *stigma*. *Fruit* a nearly spherical, pendent *drupe*, of the size and nearly of the shape of a small pear; *flesh* of a yellowish colour, almost white within, one-third to one-half an inch in thickness, opening into two nearly equal valves, exhibiting the nut and mace, which soon drop out, and the flesh then withers. *Arillus* thick, somewhat horny or fleshy, lacinated, folded and anastomosing towards the extremity, closely enveloping the nut, of a brilliant scarlet colour. *Nut* broadly oval; *shell* very hard, rugged, dark brown, glossy, about half a line thick, pale and smooth within. *Seed* oval, pale brown, quite smooth (when first deprived of the shell, but soon becoming shrivelled as it is sold in our shops). *Testa* and *tégmen* thin. *Albumen* firm, fleshy, whitish traversed with reddish-brown oleiferous veins. *Embryo* fleshy, yellowish white, imbedded in a cavity at the base of the albumen. *Radicle* short, rounded, pointing to the hilum. *Cotyledons* two, large, foliaceous, plicate.

The use both of the mace and nutmeg are well known, whether in a medicinal or economical point of view; an essential oil is prepared from them by distillation and expression. The flesh contains a bitter principle, which may be much removed by repeated washings, when the fruit is preserved in sugar.

Myristica belongs to Diœcia monadelphia of Linnæus, and to the natural order *Myristicææ*. It was referred by Jussieu to the *Laurinææ*, but differs in many important characters.¹

Plate CXX. *Myristica officinalis*. Fig. 1, *Male plant*, natural size. Fig. 2, *Perianth cut open to show the stamens*. Fig. 3, *Anther*. Fig. 4, *Female flower cut open*. Fig. 5, *Young fruit*. Fig. 6, *Ripe fruit in the act of bursting and showing the male*. Fig. 7, *Section of ripe fruit*. Fig. 8, *The Nut*. Fig. 9, *Seed*. Fig. 10, *Seed cut vertically*. Fig. 11, *Nut cut through vertically*. Fig. 12 and 13, *Embryo*.

GEN. VII.—EUPHORBIA. LINN.

Flowers monœcious in the same involucre: the female solitary and central: the males several, surrounding the female. *Involucre* either regular, or more frequently irregular and cleft on one side, campanulato-turbinate, 4-5 cleft; the segments entire, or fimbriated, or multipartite, and erect or inflected; alternating with which are as many (or rarely fewer) exterior appendages, fleshy, glandulose,

¹ We have been indebted for the above descriptions, and the accompanying plates, to the works of Professor Hooker, the most elegant botanical writer and draughtsman of the present day. All the plates which follow, with the exception of Plate CXXXIII., are also copied from those done after drawings made by the same distinguished botanist; they were originally published principally in the *Botanical Magazine*, a work that contains now considerably upwards of 3000 coloured plates, and than which none can better merit the patronage of the public.

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or petaloid, entire or two-horned, or (rarely) many cleft, patent, and reflexed. MALES consisting of several pedicels, each articulated with a filament bearing one anther, usually distinct below, with intervening paleaceous or squamiform bracteas. FEM. *Pistil* long-pedicellate, naked below, or (rarely) with an entire or trifid minute perianth. *Styles* three bifid, rarely united into one trifid at the apex. *Stigmas* six, rarely three and two-lobed. *Ovarium*, three-celled; the cells each with one ovule. *Fruit* capsular, sitting on the elongated pedicel, and nodding by it being deflexed, smooth or warted, glabrous or pilose, trilocular, the cocci bursting elastically into two valves, and deciduous.—Milky plants, herbaceous or shrubby, erect or creeping, of various appearances.

1. *E. hypericifolia*, erect, herbaceous, smooth. Leaves opposite oblique, and half heart-shaped at the base, oblong, somewhat obtuse, serrulate; petioles very short, with stipules at the base; corymbs of flowers dense, axillary, or terminal.

E. hypericifolia. Linn. *Amœn. Acad.* vol. iii. p. 113; Hook. *Exot. Fl.* t. xxxvi.

Hab. West Indies. ☉ or ♀. (Humb.)

Of this and the following we do not give either detailed characters, or a long list of synonyms, but exhibit longer generic characters, that the plates may serve to illustrate some of the natural orders.

Plate CXXI. *Euphorbia hypericifolia*. Fig. 1, *Plant* natural size. Fig. 2, *Involucre* with petaloid appendages. Fig. 3, *Involucre* cut open to show the insertion of the numerous naked monandrous male flowers, and the single naked female flower, all pedicellate. Fig. 4, *Involucre* deprived of the petaloid appendages. Fig. 5, *Involucre* with ripe fruit. Fig. 6, *Stipule*. Fig. 7, *Stamen* and anther burst open. Fig. 8, *Fruit*, with one of the cocci separating from the columella, and bursting to discharge the seed. Fig. 9, *Seed*. Fig. 10, *Seed* cut open longitudinally, showing the fleshy albumen and inverted embryo.

GEN. IX.—ESCHSCHOLTZIA. CHAMISSE.

Calyx ovato-conical, membranaceous, mitriform, very soon falling off entire. *Petals* four, their claws short, inserted on the expanded hollow apex of the peduncle. *Stamens* partly inserted with the petals, and partly attached to their claws, numerous, 6-8 opposite to each petal. Anthers terminal, linear, two-celled, the cells bursting longitudinally. *Ovarium* free, elongated. *Stigmas* sessile, four, two of which are longer than the other two, which are abortive. *Capsule* siliquiform, cylindrical, marked with ten ribs and ten striæ, two-valved. *Placentas* marginal. *Seeds* small, globose, externally reticulated. *Albumen* fleshy. *Embryo* straight, immersed in the albumen near the base of the seed, the radicle pointing to the hilum.—Stem abounding in a yellowish juice; leaves alternate, multifid; peduncles opposite to the leaves, and one-flowered, expanding at their apex into a hollow receptacle.

1. *E. Californica*.

E. Californica. Cham. in *Hor. Phys. Berol.* p. 74, t. 15; Hook. in *Bot. Mag.* t. 2887; Lindl. in *Bot. Reg.* t. 1168; Sweet, *Brit. Fl. Gard.* t. 265. This genus belongs undoubtedly to the *Papaveraceæ* of Jussieu, and *Polyandria tetragynia* of Linnæus. We have already said (p. 60), that the name ought scarcely to be retained. It was named by Chamisso in honour of Dr Eschscholz, an excellent botanist and entomologist, who accompanied him as a fellow naturalist in the voyage round the world under the command of Kotzebue. It is not, perhaps, generally known that this gentleman is a descendant of John Sigismund Elsholz, a Prussian botanist, author of a *Flora Marchica*, and after whom Willdenow named the *Elshol-*

zia cristata. The Russians, into whose service the present Elsholz went, wrote his name Eschscholz by mistake. The genus is now so well established, that the alteration to another generic name might create unnecessary confusion."—Hook.

Plate CXXII. *Eschscholtzia Californica*. Fig. 1*, *Plant*, natural size. Fig. 2*, *Base* of one of the petals, to which some of the stamens are attached. Fig. 3*, *Pistil* inserted in the cup-shaped receptacle, or hollowed extremity of the peduncle. Fig. 4*, *Section* of the ovary. Fig. 5*, *Ripe capsule*, natural size. Fig. 6*, *Seed*. Fig. 7*, *Section* of the same. Fig. 8*, *Embryo*.

GEN. X.—JANIPHA. KUNTH.

Flowers monœcious. Perianth campanulate, 5-partite. *Estivation* convolute. MALES. *Stamens* ten, distinct, inserted on the fleshy discoid torus, five of them alternate with the others, and shorter. FEM. *Style* short. *Stigmas* three, of several lobes; the lobes, as if united into one mass, marked with sinuose furrows. *Ovarium* seated on the fleshy torus, three-celled, the cells each with one ovule. *Capsule* ovate, somewhat acute at the apex, trilocular, the cocci two-valved.—Trees or milky shrubs; leaves alternate, palmate; flowers racemoso-panicled, axillary or terminal; root of some of the species tubercular and esculent.

1. *J. Manihot*; leaves palmate, 5-7-partite, glabrous, glaucous beneath, the segments lanceolate and very entire; flowers racemose.

J. Manihot. Humb. and Kunth, *Nov. Gen.* vol. ii. p. 108; Hook. in *Bot. Mag.* t. 3071.—*Manihot utilisima*. Pohl, *Pl. Bras. Icon.* vol. i. t. 24.—*Iatropha Manihot*. Linn. *Sp. Pl.* p. 1428.—Physic-nut, bitter cassada, manioc, or tapioca, of English writers.

Hab. Brazil. ♀. Flowers in July and August in our collections.

"Two kinds are especially cultivated in the colonies, the *Sweet Cassada* of Browne's *Jamaica* (p. 350), and Lunan's *Hort. Jam.* (vol. i. p. 163), *Manihot Aipi*, Pohl; whose root is of a white colour, and free from deleterious qualities; and the *Bitter Cassada*, whose root is yellowish, and abounds in a poisonous juice. We shall confine our observations to the latter kind, which is the one here figured and described. They seem not to differ in botanical character.

"When it is considered that the *Manioc* belongs to a tribe of plants, the *Euphorbiaceæ*, which is essentially distinguished by its acrid and poisonous qualities, and that the root of the plant itself abounds in a juice of this peculiar character, it cannot fail to excite astonishment in the minds of those who are not already aware of the fact, that it nevertheless yields an abundant flour, rendered innocent indeed by the art of man, and thus most extensively employed in lieu of bread throughout a very large portion of South America; and that even to our country it is largely imported, and served up at table, under the name of *Tapioca*.

"Such is the poisonous nature of the expressed juice of the *Manioc*, that it has been known to occasion death in a few minutes. By means of it the Indians destroyed many of their Spanish persecutors. M. Fernier, a physician at Surinam, administered a moderate dose to dogs and cats, who died in a space of twenty-five minutes, passed in great torments. Their stomachs, on being opened, exhibited no symptoms of inflammation, nor affection of the viscera, nor was the blood coagulated, whence it appeared, that the poison acted on the nervous system; an idea that was confirmed by thirty-six drops being afterwards administered to a criminal. These had scarcely reached

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the stomach, when the man writhed and screamed with the agonies under which he suffered, and fell into convulsions, in which he expired in six minutes. Three hours afterwards the body was opened, but no alteration was found, except that the stomach was shrunk to less than half its natural size; so that it would appear that the fatal principle resides in a volatile substance, which may be dissipated by heat; as, indeed, is satisfactorily proved by the mode of preparing the root for food.

"By various processes, by bruising between stones, by a coarse rasp, or by a mill, the root of the *Manioc* is broken into small pieces, then put into a sack, and subjected to a heavy pressure, by which all the juice is expressed. What remains is *Cassada* or *Cassava*, which, if properly dried, is capable of being preserved for a great length of time.

"In French Guiana, according to Aublet, *cassada flour* is made by toasting the grated root over the fire, in which state, if kept from humidity, it will continue good for twenty years.

"Cassava-cake, or cassava-root, is the *meal*, or the grated, expressed, and dried root of the *Manioc*, pounded in a mortar, passed through a coarse sieve, and baked on flat circular iron plates fixed in a stove. The particles of meal are united by the heat, and when thoroughly baked in this manner, form cakes, which are sold at the markets, and universally esteemed as a wholesome kind of bread. The Spaniards, when they first discovered the West Indies, found this in general use among the native Indians, who called it *Cazabbi*, and by whom it was preferred to every other kind of bread, on account of its easy digestion, the facility with which it was cultivated, and its prodigious increase. Again, in Guiana, *Cipipa* is another preparation from this plant, and is the name given to a very fine and white fecula, which, according to Aublet, is derived from the expressed juice of the roots, which is decanted off, and suffered to rest some time, when it deposits an amylaceous substance, which requires repeated washing. I know not whether this is exactly analogous to our *Tapioca*. The juice, says Sloane, evaporated over the fire, gives the *Tapioca* meal. But Lunan tells us, that, from the roots of the *Sweet Cassada*, *Tapioca* is made in Jamaica, in every respect similar to that imported, which is done by grating them, washing them, and infusing them in water, and evaporating the liquor so as to obtain a sediment like starch, which must be well dried in the sun.

"The root of the *Manioc* is also the basis of several kinds of fermented liquors; and an excellent condiment for seasoning meats, called *Cabiou*, or *Capiou*, is prepared from the juice, and said to sharpen the appetite. The leaves beaten and boiled are eaten after the manner of Spinach, and the fresh root is employed in healing ulcers.

"From what has been above stated, it will appear that the expression of the juice from the root deprives the latter of its deleterious properties; and that the application of heat to these juices renders the residue also wholesome and nourishing. And whilst cassava-bread is, as Sloane says, in the most general demand of any provision all over the West Indies, and is employed to victual ships, the use of *Tapioca* is still more extended, and throughout Europe is largely employed for the same purpose as sago and arrow-root." (Hook. in *Bot. Mag.*)

Plate CXXII. *Janipha manihot*. Fig. 1, *Branch of a plant, natural size, with female flowers.* Fig. 2, *Panicle, with mostly male flowers.* Fig. 3, *Pistil.* Fig. 4, *Stamens, and discoid fleshy torus.* Fig. 5, *Anther.* Fig. 6, *Seed.*

GEN. XI.—ANACARDIUM. JACQ. LINN.

Flowers polygamous. *Calyx* 5-partite, regular, decidu-

ous, the segments erect. *Estivation* imbricated. *Petals* five, inserted on the calyx, sessile, longer than the calyx, equal, patent above. *Stamens* ten, inserted with the petals, included, one (between two of the petals) twice as long and stout as the others. *Filaments* connate at their base. *Anthers* two-celled, ovato-elliptical, bifid at the base, attached by the back, longitudinally dehiscent on the inside. *Ovary* free, sessile, one-celled, terminating in the style; minute in the male flowers. *Ovule* one, ascending, situated at the bottom of the cell. *Style* subulate, protruded. *Stigma* capitellate. *Discoid torus* wanting. *Fruit* reniform, cartilagineo-coriaceous, one-seeded, indehiscent, seated on the enlarged pyriform fleshy extremity of the pedicel. *Seed* reniform. *Integument* simple, coriaceous, adhering. *Embryo* of the same shape as the seed, without *albumen*. *Cotyledons* half-lunate, fleshy, plano-convex. *Radicule* hooked, rising upwards from the base of the cotyledons.—Trees bearing gum; leaves alternate, simple, entire and very entire, the primary veins transverse and somewhat parallel; stipules none; panicles terminal, corymbose, branched, diffuse, bracteated; flowers fasciated; pericarp cellular within, abounding in a caustic oil.

1. *A. occidentale*.

A. occidentale. Linn. *Sp. Pl.* p. 548; Jacq. *Amer. i.* t. 181. f. 35.—*Acajuba occidentalis*. Gært. *Fruct. i.* p. 192. t. 40.—*Cassuvium pomiferum*. Lam. *Dict. i.* p. 22. *Ill. t.* 322.

Hab. West Indies, Mexico, South America, East India islands. This yields the well-known cashew-nut. It belongs to the *Terebinthaceae*.

Plate CXXIII. *Anacardium occidentale*. Fig. 1, *Branch with flowers and fruit, somewhat reduced.* Fig. 2, *Flowers not expanded.* Fig. 3, *Flower spread open.* Fig. 4, *Stamen and pistil in the calyx, one stamen (fertile) longer than the others.* Fig. 5, *Stamen.* Fig. 6, *Nut.* Fig. 7, *Nut cut open longitudinally.* Fig. 8, *Seed.* Fig. 9, *Cotyledons opened, showing the radicle (a) and plumule.*

GEN. XII.—CARICA. LINN.

Flowers dioecious. *Calyx* (minute) five-toothed. *MALES.* *Corolla* infundibuliform. *Stamens* ten, the alternate ones shorter. *FEM.* *Corolla* deeply five-parted. *Stigmas* five. *Fruit* like a pepo, many-seeded. *Seeds* covered with a wrinkled membrane.

1. *C. Papaya*; leaves palmate, seven-parted, segments oblong acute sinuate, the intermediate one trifid; fruit oblong, furrowed.

C. Papaya. Linn. *Sp. Pl.* p. 1466; Lindl. in *Bot. Reg.* t. 459; Hook. in *Bot. Mag.* t. 2898 and 2899.—*Papaya vulgaris*, Lam. *Ill.* t. 821.—*Papaya Carica*. Gært. *Fruct.* vol. ii. p. 191, t. 122, f. 2.

Hab. South America. 5.

This, the *Papaw* tree, yields a milky juice; and, as Browne mentions, if water be impregnated with it, it will make all sorts of meat washed in it very tender; but eight or ten minutes steeping will render it so soft that it will drop in pieces from the spit before it is well roasted, or turn to rags in the boiling. If old hogs and poultry be fed upon the leaves and fruit, however tough the meat they afford might otherwise be, it is thus rendered perfectly tender. Even the vapour of the tree serves this purpose; hence many people in the West Indies suspend the joints of meat, fowls, &c. in the upper part of the tree, in order to prepare them sooner for the table.

Plate CXXIV. *Carica Papaya*. Fig. 1, *Tree, much reduced.* Fig. 2, *Portion of a panicle or raceme of male flowers.* Fig. 3, *Male flower, cut open.* Fig. 4, *Calyx.* Fig. 5, *Portion of the tube of the corolla bearing young sta-*

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mens, the rest being cut away. Fig. 6 and 7, *Anthers.* Fig. 8, *Female flowers.*

GEN XIII.—ANDROMEDA. LINN.

Calyx five-parted. *Corolla* gamopetalous, somewhat campanulate. *Stamens* ten. *Anthers* two-horned. *Style* one. *Capsule* five-celled, loculicidal, with a central five-lobed placentiferous column.

1. *A. hypnoides*; stem procumbent; leaves imbricated erect subulate; peduncles solitary; one-flowered, terminal; corolla campanulate five-cleft, the segments obtuse and converging; style ovato-acuminate.

A. hypnoides. Linn. *Succ.* p. 355; *Flor. Lapp.* t. 1. f. 3; Hook. in *Bot. Mag.* t. 2936.

Hab. Extreme north of Europe, Asia, and north-west coast of America. 5.

We have already (p. 60) given Linnæus's interesting account of the origin of the name *Andromeda*.

Plate CXXIV. *Andromeda hypnoides.* Fig. 1*, *Plant*, natural size. Fig. 2*, *Flower.* Fig. 3*, *Back view*, and Fig. 4*, *Front view of a stamen.* Fig. 5*, *Leaf.* Fig. 6*, *Pistil.* Fig. 7*, *Section of the ovarium.*

Gen. XIV.—ARTOCARPUS. LINN.

Flowers monœcious, in an amentum. *MALES.* *Perianth* simple, of one, two, or three segments. *Filament* solitary, as long as the perianth. *FEM.* *Perianth* of one piece, the mouth contracted. *Fruit* a sorosis.

1. *A. incisa*; leaves cuneato-ovate, lobed in a pinnatifid manner, glabrous, or nearly so, above, scabrous beneath.

A. incisa. Linn. *Fil. Supp.* p. 411; Lam. *Ill.* t. 744; Hook. in *Bot. Mag.* t. 2869, 2870, and 2871.—A communis. Forster, *Gen.* p. 102, t. 51.

Hab. Ladrone islands, but now cultivated throughout the tropics. 5.

Of this there are two varieties; one producing nuts, which is called the *Bread-nut* (that here figured); the other in which the nuts are abortive, and called the *Bread-fruit*. This last is well known to all who have read the interesting voyages of Dampier and Anson. This genus belongs to the *Artocarpeæ*, a section of *Urticeæ*.

Plate CXXV. *Artocarpus incisa.* Fig. 1, *Branch*, reduced to one third of the natural size, with male and female flowers. Fig. 2, *Section of an amentum of male flowers*, natural size. Fig. 3, *Male flowers.* Fig. 4, *Single male flower.* Fig. 5, *Cluster of female flowers.* Fig. 6, *Single female flower.* Fig. 7, *Ovarium.* Fig. 8, *Ovarium laid open to show the ovule.* Fig. 9, *A variety of the ovarium with two cells.* Fig. 10, *Transverse section of the ovarium.*

Gen. XIV.—CYCAS. LINN.

Flowers diœcious. *MALES* in a very thick amentum: *scales* somewhat imbricated, inserted on the common axis, somewhat triangular, tapering from the apex to the base, terminated at the apex with a recurved point, on the under side sprinkled without order with bivalve anthers. *FEM.* Arranged in ensiform spadices, which are between foliaceous and carnosæ, and bear the *flowers* on both margins: flowers erect, half immersed. *Fruit* erect, a naked drupaceous seed.—Trees with an erect, round stipes; leaves pinnatisect, and forming a crown round the stem.

C. circinalis; segments of the leaves linear-lanceolate, plane; petioles aculeate; female spadices few-flowered, acuminate, inciso-serrated; fruit ovato-globose, glabrous.

C. circinalis. Linn. *Sp. Pl.* p. 1658; Hook. in *Bot. Mag.* f. 2866 and 2867; Richard *Mem. sur les Conif.* p. 187, t. 24, 25, 26.

Hab. East Indies. 5.

This belongs to the natural order of *Cycadeæ*, which, with *Conifera*, is remarkable for having no pericarp farther than the spadix or its scales.

Plate CXXVI. *Cycas circinalis, male.* Fig. 1, *Plant*, reduced to one-twelfth of the natural size. Fig. 2, *Male amentum*, natural size. Fig. 3, *Upper side of a scale.* Fig. 4, *Under side of the same.* Fig. 5, 6, 7, *Anther.* Fig. 8, *Pollen*, magnified. Fig. 9, *Small pinna from a leaf.*

As to the manner in which botanical works may be got up, whether as Monographs of Orders or Genera, as Floras of particular countries or districts of a country, as a Hortus, as a Genera Plantarum, a Species Plantarum, or as a Systema Vegetabilium, or as Botanical Plates; though each be subjected to a few rules, yet much is left to the taste of the author. We shall therefore pass them over, and proceed to an

Herbarium.

Descriptions and figures, however exact they may be esteemed by their authors, have so often been found imputed by others, that some means must be resorted to, that every one may examine for himself the plant treated of. This in a measure may be attained by having access to gardens; but in all our gardens together, perhaps not more than one fourth of the vegetable productions of the globe are cultivated, and of these many have not been made to bear blossoms or fruit, and are therefore useless; nor can they be certainly seen in all states at the very time when we particularly desire them. In a garden, also, the cultivator is seldom an experienced botanist, and we may therefore expect many errors in nomenclature. The name, therefore, so far from assisting us to trace what an author had in view, may tend to puzzle us still more. In a garden, likewise, plants are made as showy as possible, to please the eye, and often depart very much from the type of the species as taken from its original locality. The necessity, then, was soon perceived of preserving specimens of every thing that is described, so that these may be communicated to other botanists, examined by them, and criticised; and as it was impracticable to retain for any length of time specimens in the fresh state, means were devised to extract the juices; and this being accomplished, no alteration could afterwards take place. Such is the origin of an herbarium, which is a collection more or less considerable of different plants, dried as carefully as possible, at a time when they were in leaf, in flower, and in fruit; while a separate collection of fruits alone, either dried, or, if they are fleshy, preserved in spirits or salt water, is called a granary. The mode of drying plants is very simple.

Paper of an absorbent nature (such as common gray or brown packing paper, or old newspapers) must be procured, about seventeen or eighteen inches long, and twelve broad, and a few strong deal boards of the same size. The specimens may be gathered in a large tin box, or in a basket so covered as to exclude the rays of the sun; and when one cannot soon after proceed to dry them, a little water may be occasionally sprinkled over them to keep them fresh. In order to dry them, take one of the boards and lay a few sheets of paper upon it. The quantity of paper will of course depend on its thickness, and on the nature of the specimens; for when they are full of moisture, more paper is requisite than for more tender or less juicy plants; and when they have thick or knobby stems, or large hard fruits, a still greater quantity must intervene between each layer of plants. Having taken, then, some sheets of paper, spread upon them the plants, so as not to allow the one to overlap the other; and with this precaution several may be laid on the same sheet. It

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is quite useless to spread out or separate the leaves or flowers with the hand. If the specimen be at all in a fresh state, its natural appearance is best preserved by allowing it to take the position which chance may direct. Above this layer of plants place some sheets of paper, then another layer of plants, and so on till a packet be formed of a foot, or a foot and a half high. When a considerable number of woody plants is in the packet, a few thin boards may be interspersed, to prevent the more delicate plants sustaining injury; this will also flatten the coarse ones more easily. On the top of the packet another board is to be placed, and on it a large weight or dry stone when such can be procured, so as to press the plants, and make them give out their juices to the paper. The weight need scarcely be less than 50 lbs.; and if the plants have thick or woody stems, even 80 lbs. or 100 lbs. may be applied. In travelling, it is impossible to carry about large stones or weights, in which case the plants may be pressed by means of two or three leather belts passing round the packet, and pulled extremely tight. When plants have been subjected to pressure for twenty-four or forty-eight hours, the weight may be taken off, and the paper will be found to have absorbed a considerable portion of moisture from the plants. It must therefore be now removed, and the specimens laid on dry paper, and subjected to the same process as before. This must be repeated until the plants are dry. It may be less troublesome were the sheets, upon which the plants immediately rest, laid down in a dry situation for a few hours with the plants on them. The moisture will quickly evaporate, and the sheet, without disturbing the plants, may be laid upon a layer of dry paper. The wet paper, when thoroughly dried, can be used as often as one chooses. When the specimens are dry, which may be easily ascertained by their stiffness, or not curling up when in a dry situation, they may be packed up (of small ones, fifty or sixty specimens on a sheet), in very little space; only one sheet of paper is then requisite between each layer of plants. Specimens must be gathered, when possible, in dry weather. They ought to be both in flower and in fruit, the latter being obviously as useful as the former to the scientific botanist; and not less than from twelve or fifteen specimens of each kind ought to be taken, one specimen proving frequently of little use. Small herbaceous plants, not more than sixteen or seventeen inches high, may be pulled up by the root, and dried entire; and some that are even longer, as grasses and ferns, may be doubled two or three times. Of larger plants, such as shrubs and trees, specimens are to be taken at least sixteen or seventeen inches long; and if the leaves on a plant vary much in shape, a corresponding number of specimens may be dried of each kind. Those plants which are of a very fleshy or succulent nature, as tulips, &c. ought to be plunged (all but the flower) for a few seconds into *boiling* water. This deprives them of life; and when the extraneous moisture is allowed to dry off, or wiped away with a towel, they may be dried as other plants. Lichens and fungi may be dried in the common way, although those of the latter tribe seldom make good specimens. Mosses grow frequently in tufts, and are to be a little separated by the hand before they be pressed. The larger or coarse sea-weeds ought to be plunged in boiling water, and treated as succulent plants. The smaller ones, when one is hurried, may first be partially dried in the open air, in a shady situation, and afterwards subjected to a very gentle pressure, till quite dry, when they may be packed up with the other plants; and, when our time permits, they will be restored to their original form by washing them in cold fresh water. They are then to be neatly spread out on pieces of writing paper, to which most of the species will adhere; after this they

are to be pressed, and a little attention must then be paid lest the specimens also adhere to the absorbent paper. Taxonomy.

When a packet so prepared is sent from abroad, it ought to contain at least 100 different kinds, or more than 1000 specimens. It may then be placed in a deal box, which is to be well closed, so as to prevent injury from water; and if the box be previously well rubbed or sprinkled within with oil of turpentine, or any other essential oil, the specimens will arrive safe from the depredations of insects. Small fleshy plants and pulpy fruits may be put in a jar of spirits, and forwarded in that state. In the case of fruits, a piece of wire, with a *number*, should be attached, so as to correspond to the dried specimen of that species.

When plants are either dried by ourselves or received in that state from others, our next care is to form the *herbarium*. For this the specimens are to be either glued down on single sheets of stiff white paper, all of an uniform size, or, as the glue attracts insects and prevents afterwards a perfect analysis of the specimen, others prefer attaching them by means of cross bands. Either of these modes will enable us to keep our herbarium in order; but, without assistance, so much time is spent in the fixing them down, that most botanists now keep the plants loose within sheets of paper of a softer texture. This enables us quickly to dispose of our specimens in the collection; and when turned over carefully, very little damage is afterwards sustained. No more than one species ought to occupy a sheet; but owing to receiving the same plant from different authors and different countries, we must often devote several sheets to one species. Each specimen ought to have a label indicating the locality, the name of the donor, when gathered, or any peculiarities about it; and every sheet ought to have attached to it the name of the plant. All the species of a genus may either be separated from those of another, by being placed within a sheet of strong paper marked on the outside with the name of the genus, or by a thin piece of pasteboard, according to the taste of the possessor.

As to the order in which genera are to be arranged, the alphabetical is the worst, and the Linnæan system next. The best is according to some one of the variations of the natural method, it is of little importance which, provided one adheres to it so much that he can by association go to the order without having constant recourse to a catalogue.

When it is necessary to analyse a dried plant, we may expose the flower or fruit to the steam of boiling water, or those that are of a less delicate nature we may detach, and allow to remain in warm water until the parts we are to examine be so softened that we may easily dissect them under the microscope. Much practice, address, and even knowledge of the structure of plants, is however necessary, so that no appearance exhibited on dissection may fail to make some impression on us. Every thing must be observed and theorised on as we proceed. And we may here remark, that the best instrument for this purpose, at a moderate price, is *Ellis's single and aquatic microscope*, which is furnished by Jones (Holborn, London), with five lenses, two of which are reflectors, for three guineas.

III.—TAXONOMY.

As we have already stated, taxonomy is that branch of botany which has for its object the combination of all our observations on plants, so as to form a system or classification.

When science was in its infancy, and when few plants were observed, they were described or treated without any particular arrangement; or if some method was adopted, History.

it was merely empirical, and of little use to others. Theophrastus, Dioscorides, and Pliny, who respectively treated of vegetables, may therefore now be justly rejected as systematists; and we may pass on to a much more modern date, when the characters began to be derived from the organization of plants; for it was only then that botany became a science. But as the organs of plants were various in number, so also were the systems, some botanists giving a preference to one, others to another; some laying chief dependence on the roots, some on the stems, others on the leaves, and others on the inflorescence. Conrad Gessner, born at Zurich in 1516, was the first who demonstrated that the characters drawn from the flowers and fruit were most to be depended on, as these were the most permanent and unchangeable parts of a plant; he also pointed out that certain groups possessed particular characters in common. His work was published in 1541. It does not appear that he gave any preference to one organ more than to another as the basis of a system. Cæsalpinus, born in 1519, at Arezzo in Tuscany, was a follower of Gessner, and may be said to have been the first who actually invented a system. He set out by distinguishing vegetables into trees and herbs; with the former arranging shrubs, and with the latter suffruticose plants. He next divided each of these, the first into two classes, the last into thirteen, according to the fruit and situation of the embryo (which he termed corculum) in the seed. This system, therefore, being a primary approximation to a natural method, will render him ever memorable.

In 1680 Morison published the second volume of his *Historia Plantarum*. In this work a new system is offered, but some of the eighteen classes contained in the second and third volumes possess no genuine distinctive characters. His sections or secondary divisions are 108 in number, and are taken from the figure and substance of the fruit, the number of seeds, sepals, and petals, the figure of the root, the direction of the stem, the colour of the flower, the place of growth, and one from the medical virtues of some of the plants that compose it.

Ray proposed his method to the world in 1682. It was founded similarly to Morison's, and divided originally into twenty-five classes. But this he afterwards carefully corrected and improved at different times, so that the plan of arrangement which at present bears the name of that author is entirely different from what first appeared. It now was made to consist of thirty-five classes, the distinguishing marks of some of which were derived from the habit or external appearance; of others, from the greater or less degree of perfection of the plants, from their place of growth, the number of seeds, fruits, petals, or sepals to each flower, or from the nature of the fruit or inflorescence. They were as follow:—I. Herbs. 1. Submarinæ or sea-plants, including Zoophytes and Corals. 2. Fungi. 3. Musci, including Hepaticæ and Lichens. 4. Capillares or ferns. 5. Apetalæ or apetalous plants, comprehending, among other anomalies, the genus *Equisetum*. 6. Planipetalæ, or those with semiflosculous compound flowers, corresponding to the Cichoraceæ of Jussieu. 7. Discoideæ, containing such of the Corymbiferæ of Jussieu as have a pappus. 8. Capitata, corresponding principally to the Cynarocephalæ of Jussieu, but more extensive, and including all plants with tubular flowers that are collected into a scaly involucre. 9. Corymbiferæ, similar to those of modern botanists, but limited to the species without a pappus. 10. Gymnomonospermæ, or such as were supposed to have one naked seed; to this belongs *Valeriana* and *Armeria*, and, by some unhappy chance, *Thalictrum*. 11. Umbelliferæ. 12. Stellatæ, corresponding to one of the sections of Rubiaceæ. 13. Asperifoliæ. 14. Verticillatæ, or the Labiatæ of Jussieu, and *Didynamia angiospermia* of Linnæus. 15. Polyspermæ,

or those with many apparently naked seeds, as *Ranunculus*, *Malva*, *Potentilla*, and *Alisma*, a most unnatural assemblage: 16. Pomiferæ, the fruit of which resembled an apple, and among these the gourds and passion-flowers: 17. Bacciferæ, or every herb with a berry, whether a potato or asparagus: 18. Multisiliquæ, such as *Aquilegia* and *Sedum*, that had a fruit of apparently several pods: 19. Ditrpetalæ, containing principally *Tillandsia*, but seemingly not understood by Ray himself: 21. Tetrapetalæ, with either a long or a short pod, not however confined to the Cruciferæ of Jussieu, but comprehending *Veronica*, *Euphorbia*, *Plantago*, &c.: 22. Papilionaceæ or Leguminosæ, including *Fumaria*: 23. Pentapetalæ, as *Dianthus*, *Cistus*, *Hypericum*: 24. Pentapetaloidæ, or those with a monopetalous corolla, so divided as almost to resemble five petals, among which are enumerated *Erythraea*, *Apocynum*, *Oxalis*, &c.; but indeed the 19th, the 23d, and the present classes, are much confused by the author: 25. Bulbosæ, and their allies, including a great part of the monocotyledones, as Liliaceæ, Asphodeleæ, Orchideæ, or Irideæ: 26. Graminifoliæ, comprehending the Grasses, Cyperaceæ, and Juncæ: 27. Anomalæ, or those herbs, as *Nymphaea*, *Piper*, and *Polygala*, that were not reducible to any of these. II. Trees. 28. Arundinaceæ, including the palms: 29. Juliferæ, called also Apetalæ, containing those in which the fruit is separated from the stamiferous flower; under which Ray ranked the Amentaceæ and Coniferæ, the Elm, the Mulberry, &c.: 30. Aggregatæ, or trees with the flower and fruit collected together into one mass, as the Fig: 31. Umbilicatæ, with an inferior, fleshy, or pulpy fruit; a heterogeneous set: 32. Non-umbilicatæ, or those where the flower adhered to the bottom of the fruit; these are again divided into Pruniferæ, Bacciferæ, and Pomiferæ: 33. Vasculiferæ, or trees with a dry fruit: 34. Siliquosæ, or trees or shrubs bearing a legume, follicle, or any of such elongated fruits: 35. Anomalæ, or such as are not referable to any of the above. Most authors only enumerate thirty-three classes, by omitting the 24th and 30th, but which nevertheless form a part of his arrangement. Ray gives, in addition, more lengthened characters of several of these, but it is quite unnecessary here to notice them. His principal division into herbs and trees is extremely faulty, and separates plants otherwise very closely allied. His method, however, being a great approximation to a natural one, deserves much praise, and we believe that it was the opinion of the late Sir J. E. Smith, who was well qualified to judge, that Ray as a botanist was eclipsed by few but Linnæus.

To pass over several of an inferior note, we come now to Tournefort. This distinguished individual was born at Aix in Provence in 1656. He was professor of botany at the Jardin des Plantes of Paris, and was sent in 1700 by Louis XIV. to the Levant. He travelled through Greece, and surveyed the borders of the Black Sea and the islands of the Archipelago, and returned to Paris, where he published an interesting account of his expedition. But before he set out, he had already exposed his new system of arranging plants in his *Institutiones Rei Herbariæ*, illustrated by many plates, and containing a description of 688 genera and 10,146 species; and it is difficult to say whether he deserves most honour for his new classification, or for the attempt to characterize the genera and species.

The method of Tournefort is composed of twenty-two classes, of which the characters are derived, 1st, from the consistence and size of the stem, thus dividing vegetables into herbs or suffruticose plants and shrubs, or trees; in which respect his system is subject to the same fault as that of Ray, notwithstanding Rivinus, an intervening botanist, had demonstrated the absurdity of such a division: 2d, From the presence or absence of the corolla: 3d, From

Taxonomy.

the flowers being simple or solitary, or compound or united into a common involucre: 4th, From the corolla being of one (or gamopetalous) or of several petals: and, 5th, From its regularity or irregularity. His classes are:—

HERBS OR UNDERSHRUBS.

§ 1. Flowers Simple or Solitary.

1. Flowers monopetalous, Campaniform.
2. Flowers monopetalous, Infundibuliform and Rotate.
3. Flowers monopetalous, Anomalous.
4. Flowers monopetalous, Labiate.
5. Flowers polypetalous, Cruciform.
6. Flowers polypetalous, Rosaceous.
7. Flowers polypetalous, Rosaceous Umbellate.
8. Flowers polypetalous, Caryophyllaceous.
9. Flowers Liliaceous.
10. Flowers polypetalous, Papilionaceous.
11. Flowers polypetalous, Anomalous.

§ 2. Flowers Compound.

12. Flowers Flosculose.
13. Flowers Semiflosculose.
14. Flowers Radiate.

§ 3. Herbs without Petals.

15. Flowers Apetalous or Staminiferous.
16. Flowers absent, Seed present.
17. Flowers and Fruit invisible.

TREES AND SHRUBS.

18. Flowers Apetalous.
19. Flowers Apetalous, Amentaceous.
20. Flowers Monopetalous.
21. Flowers Rosaceous.
22. Flowers Papilionaceous.

In the 3d class, the term anomalous means irregular, but not labiate; in the 11th, irregular but not papilionaceous. A liliaceous flower, as the 9th class, he afterwards explains to be a regular corolla of six or three petals, or even a monopetalous one with six divisions, but always having a fruit of three cells. The 16th contains the ferns; the 17th the other cryptogamia, which he says were commonly denied both flower and fruit. Such were the twenty-two classes established by Tournefort. Each of them contains sections, of which there are in all 122; and though at first sight it may appear simple and easy of reference, it still presents considerable difficulties, from many of the characters being merely negative, and others by no means decisive.

Artificial System.

The systems we have already noticed, whether of Cæsalpinus, Morison, Ray, or Tournefort, were all of them more or less attempts at a natural classification; and such being the case, their great error was in selecting any one particular part, and not an assemblage, as the ground of division. This, indeed, is the grand difference between a natural and artificial method. The latter has merely in view the knowledge of the names of plants; and its only use being, therefore, to afford an easy means of discovering the name in books, by as slight an inspection of the plant as possible, every one may have an arrangement of his own, and there can be no fixed rule, for the system is purely artificial. The natural method is not solely for the finding out

the names of plants; its grand object is to exhibit, along with the name, the relation which one plant bears to another, and to class them, as near as we can, in the order they would stand with regard to each other in the grand book of nature. To be correct, it ought to be founded on the immutable laws of nature herself, and not on the will of man. But although these two are grounded so differently, they ought not to be viewed as in opposition to each other. "No person, surely, who has published a natural system, without knowing all the plants in the world, will suppose that he has removed every present obstacle, much less anticipated every future obscurity, so that no insuperable difficulty can occur to the investigator of plants by such a system; neither can any artificial system claim such perfection: but they may combine their powers, and co-operate in instruction. The one may trace an outline, which the other may correct and fill up. The first may propose, and the second elucidate; the former may educate and improve the memory and observation for the use of the latter. When they oppose each other, their several defects and weaknesses appear; by mutual assistance they strengthen themselves."¹

"About the end of the seventeenth century, and the beginning of the eighteenth, the necessity of some botanical system, of arrangement as well as nomenclature, by which the cultivators of this pleasing science might understand each other, became every day more apparent. Nor was there any deficiency of zeal among the leaders and professors of this science. Systems, and branches of systems, sprung up over the whole of this ample field, each aspiring to eminence and distinction above its neighbours. Many of these, like the tares that fell by the way side, soon withered for want of root; others, like the *herba impia* of the old herbalists, strove to overtop and stifle their parents; and all armed themselves plentifully with thorns of offence, as well as defence, by which they hoped finally to prevail over their numerous competitors. This state of scientific warfare did not, in the meanwhile, much promote the actual knowledge of plants, though it prepared the way for a final distribution of the numerous acquisitions which were daily making by the more humble, though not less useful, tribe of collectors and discoverers. The success of the Linnæan artificial system is not altogether, perhaps, to be attributed to its simplicity and facility, nor even to the peculiar attention it commanded by its connection with the striking phenomenon, brought into view at the same time, of the sexes of plants. The insufficiency, or at least the nearly equal merits, of the many other similar schemes that had been proposed, began to be most strongly felt just at the time when the great progress and success of practical botany rendered the necessity of a popular system most imperious. While the cause of system was pending, some of the greatest cultivators of science were obliged to have recourse to alphabetical arrangement. This was the case with Dillenius, the man who alone, at the time when Linnæus visited England, was found by him attentive to, or capable of understanding, the sound principles of generic distinction."²

Linnæus was born in the province of Smaland, in Sweden, on the 23d May, 1707. His father wished him to study divinity, but he himself preferred the open air and the gathering of plants. His parent then thought of making him a shoemaker, and in this might have succeeded, had not Rothmann, the provincial physician at Wexicœ, interfered, and persuaded him to permit his son to study medicine; and had such not happened, Linnæus' genius

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¹ *Encyclopædia Britannica*, Sixth Edition, Supp. vol. ii. p. 414.² *Ibid.* v. 376.

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might have been for ever suppressed. After experiencing many hardships, and living in great poverty, the young naturalist got into favour with Celsius, the professor of divinity at Upsal; and by his exertions, and those of Rudbeck, succeeded in obtaining permission to make a journey through Lapland at the expense of the academy. On his return he published the *Flora Lapponica*. In a few years his fame increased; and, having travelled into Holland and England, he was appointed professor of botany at Upsal after Rudbeck's death, and from time to time honours were showered upon him. His great merit consists in having constituted the genera on better principles, given proper generic and specific names, introduced a better glossology, described species more accurately and according to certain rules, and invented a new system, founded upon the sexes of plants, unquestionably the best and most simple of all the artificial systems attempted either before or since.

system of
Linnæus.

The basis of the Linnæan distribution of plants rests almost entirely on the male organs or stamens; and where no sexes could be distinguished, the proposer of it termed the plants Cryptogamous, and the class including such, the twenty-fourth of his arrangement, Cryptogamia. Among the first twenty-three classes, or phanerogamous vegetables, some have the flowers hermaphrodite or containing both sexes; others again have them separate, or are dichinous. To the former belong twenty classes, to the latter three. Again, hermaphrodite or bisexual flowers may have the stamens either free from the pistillum or united to it, and hence another division; but as only one class belongs to the last, there are nineteen to the first. These nineteen are further divisible, according as the stamens are free from each other or united together. The former may be equal or unequal in length; and those again which are equal may be either definite or indefinite in number. Upon these considerations Linnæus founded his classification, which we will presently exhibit, not indeed precisely as it was left by Linnæus, but as it is now to be found in most of our modern works. While we admit slight changes upon it, the plan or method is unaltered; and it would be as preposterous to say that what is now adopted is not the system of Linnæus, as it would be to assert that the various sketches of the natural system, whether as given by Browne, by De Candolle, by Richard, by Agardh, by Rudolphi, by Hooker, Don, or Lindley, are not variations of the method of Jussieu. All the natural classifications now in use are assuredly founded on that of Jussieu, and differ from each other in a very slight manner, either in the greater subdivisions of the orders, or in the mode of following each other, upon which no two botanists can possibly be agreed; and, in the same way, the artificial system, whether or not we adopt the changes recommended by Smith, or by Withering, or by Sprengel and others, being decidedly grounded on his principles, is that of Linnæus. It is as follows:—

§ 1. Stamens definite and equal.

- Cl. 1. Monandria, or with one stamen.
2. Diandria, or with two stamens.
3. Triandria, or with three stamens.
4. Tetrandria, or with four stamens.
5. Pentandria, or with five stamens.
6. Hexandria, or with six stamens.
7. Heptandria, or with seven stamens.
8. Octandria, or with eight stamens.
9. Enneandria, or with nine stamens.
10. Decandria, or with ten stamens.

§ 2. Stamens indefinite.

11. Dodecandria; stamens from eleven to nineteen.

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12. Icosandria; stamens twenty and upwards, perigynous, or inserted on the calyx.
13. Polyandria; stamens twenty and upwards, hypogynous, or inserted on the receptacle.

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§ 3. Stamens unequal.

14. Didynamia; stamens four, two longer than the others.
15. Tetradynamia; stamens six, four longer than the others.

§ 4. Filaments united.

16. Monadelphia; one bundle of stamens, or androphore.
17. Diadelphia; two bundles of stamens.
18. Polyadelphia; several bundles of stamens.

§ 5. Anthers united.

19. Syngenesia; stamens five, united by their anthers, flowers collected into a common involucre.

§ 6. Stamens united to the pistil.

20. Gynandria.

§ 7. Flowers unisexual.

21. Monœcia; stamens and pistils on the same individual.
22. Diœcia; stamens and pistils on different individuals.
23. Polygamia; hermaphrodite and unisexual flowers, either on the same or different individuals.

§ 8. Flowers invisible.

24. Cryptogamia; neither stamens nor pistils.

Although we have prefixed sections to the above, that the method may be understood more readily, yet we must remark that such a plan is liable to errors. Thus some of the fifth class have the anthers united, as in the nineteenth; and the tenth has frequently an inequality in the length of the stamens; but these are not the faults of the system, some of which will be traced out in the sequel.

In the first thirteen classes, the characters of the orders or subdivisions of the classes are derived from the number of the styles or female organs, the names Monogynia, Digynia, Trigynia, &c. indicating respectively one, two, three, &c. styles.

In the fourteenth class, or Didynamia, Linnæus took his ordinal characters from the structure of the fruit. When this is formed of four akenia situated at the bottom of the calyx, so as to resemble naked seeds, he called the order Gymnospermia; and when the fruit was a capsule containing several seeds, he termed the group Angiospermia. Tetradynamia presents also two orders, the one with a silicule, the other with a siliqua; and hence they were called Siliculosæ and Siliquosæ. A third order has been added, by Sprengel, for such as have an indehiscent fruit, and De Candolle has proposed to subdivide the class according to the relative position of the cotyledons and radicle. The sixteenth, seventeenth, and eighteenth classes being according to the union of the filaments, the number of stamens is made to serve as a character for the orders.

In Syngenesia, where the anthers are united, and there are almost constantly five stamens, other means were resorted to. Some florets were observed to be bisexual, others with stamens or pistils only. In reference, therefore, to the twenty-third class, Linnæus gave to each of the orders the name Polygamia, with another epithet to mark their respective peculiarities. The first he terms Polygamia æqualis, all the florets being equally fertile and bisexual; the second Polygamia superflua, where the florets of the disc are bisexual, but those of the circumference or

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ray female, both producing perfect seed: the third Polygamia frustranea, having the florets of the disc bisexual and fertile, but those of the ray sterile, from either the total absence of a pistil, or the imperfection of the stigmata. In the second order the florets of the ray were only superfluous, here they are totally useless. The fourth, or Polygamia necessaria, has the florets of the disc bisexual, but sterile on account of the imperfection of the stigmas: those of the ray, however, containing only pistilla, are fertilized by the pollen of the former. They are thus necessary for the continuation of the species, and hence the name. The fifth, Polygamia segregata, has all the florets bisexual, but each of them contained an involucre peculiar to itself; the whole, as in the other orders, being collected within a common involucre. To these Linnæus added a sixth, Polygamia monogamia, wherein the flowers were not collected in a common involucre; but this has now been transferred to Pentandria monogynia.

In Gynandria the orders are taken from the number of the stamens. Monœcia and Diœcia, including plants that are monandrous, diandrous, monodelphous, or gynandrous, have the names of the orders, as Monandria, Decandria, Gynandria, taken from some of the preceding classes. The twenty-third class, or Polygamia, containing plants with bisexual and unisexual flowers mixed either on the same or distinct individuals, has in consequence been divided into three orders: Monœcia, in which the flowers are bisexual and unisexual on the same individual; Diœcia, when one bears the bisexual and another the unisexual blossoms of both kinds; and Triœcia, where one has the bisexual, another the male, and a third the female flowers.

Cryptogamia was originally divided by Linnæus into four orders, Ferns, Mosses, Algæ, and Fungi; but so little was then known about the structure and limits of these, that it is now generally agreed to adopt nearly the same divisions as are employed in the natural method.

Service rendered by Linnæus.

"Linnæus¹ had no sooner published and explained his method of arranging plants, according to that which is generally termed the Sexual System, than it excited considerable attention. His elegant and instructive *Flora Lapponica* could not be perused by the philosopher or the physician, without leading its readers occasionally aside, from the immediate objects of their inquiry, into the paths of botanical speculation, and awakening in many a curiosity, hitherto dormant, on such subjects. But the scope of that limited Flora is by no means sufficient to show either the necessity or the advantages of any mode of arrangement. Linnæus may be said to have grasped the botanical sceptre, when, in the year 1753, he published the first edition of his *Species Plantarum*; and the commencement of his reign must be dated from that period. The application of his system to universal practice, in this compendious distribution of all the known vegetables of the globe; his didactic precision; his concise, clear, and certain style of discrimination; his vast erudition displayed in synonyms; and, perhaps as much as any thing else, the fortunate invention of trivial or specific names, by which his nomenclature became as evidently commodious, and indeed necessarily popular, as any part of his performance; all these causes co-operated to establish his authority. An immediate impulse was given to practical botany. The vegetable productions of various countries

and districts were marshalled in due array, so as to be accessible and useful. A common language was established throughout the world of science; a common stock of knowledge and experience began to accumulate, which has ever since been increasing, and can now never be lost. Of these partial Floras to which we allude, those of Lapland and Sweden, the productions of Linnæus himself, were the models of most of the rest, and have never, on the whole, been excelled.

"Hence arose the Linnæan school of botany, which, Linnæan though founded in Sweden, extended itself through Hol- school land, Germany, and more or less perfectly in other parts of Europe, though not without impediments of which we are hereafter to speak. In Britain it was firmly established, by the influence of some of the most able pupils of Linnæus, and strengthened at length by the acquisition of his literary remains. But these are adventitious supports. The strength of philosophical, like political, authority, is in public opinion, and the cement of its power is public good.

"As we proceed to trace the practical influence of the Linnæan system, or rather of the facility which it afforded in botanical studies, it will be useful at the same time to observe the effects of adventitious circumstances, which render botany almost a different sort of study in different parts of the habitable globe.

"In those northern ungenial climates, where the intellect of man indeed has flourished in its highest perfection, but where the productions of nature are comparatively sparingly bestowed, her laws have been most investigated and best understood. The appetite of her pupils was whetted by their danger of starvation, and the scantiness of her supplies trained them in habits of economy, and of the most acute observation. The more obvious natural productions of such climates are soon understood and exhausted. But this very cause led Linnæus to so minute a scrutiny of Swedish insects, as had never been undertaken before in any country; in consequence of which a new world, as it were, opened to his contemplation; and the great Reaumur declared that Sweden was richer in this department than all the rest of the globe. Such indeed was its appearance, because it had been more carefully examined. When the ardour and acuteness of the pupils of the Linnæan school first sought matter of employment for their talents, some few had the means of visiting distant and scarcely-explored countries. But this could not be the lot of many. The greater part were confined to their native soil; and it is remarkable that those who are longest so confined have displayed in the sequel the greatest abilities, and have rendered the greatest services to science, independently of the accidents which made the labours of others imperfect or abortive. Such men as Ehrhart and Swartz were not to be satisfied with the general productions of the fields or gardens to which they had access. They had no resource but in the recondite mysteries of cryptogamic botany in the first instance. To these they directed their microscopic eyes and more discriminating minds with the happiest success. When they had derived from hence an ample harvest, Ehrhart, limited in circumstances and opportunities, hindered morcover perhaps, in some degree, by a singularity and independence of character, not always favourable to worldly prosperity, opened to himself a new path. The

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Botany of the North

Ehrhart.

¹ This historical sketch, almost to the commencement of the exposition of the Jussieuan or natural method, is extracted from the article BOTANY in the Supplement to the fourth, fifth, and sixth editions of this Encyclopædia, which was written expressly for that work, in 1816, by the late Sir James Edward Smith. During these last fifteen years the grave has claimed for its own not only Sir James himself, but most of the distinguished individuals whom he here notices as being then alive. As it was, however, desirable to retain this sketch entire, the author of the present article has refrained from making those alterations which the lapse of time might otherwise have rendered necessary.

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native trees of the north, and especially the hardy shrubs and arborescent plants of the gardens, had not, as he judiciously discovered, received that correct attention, even from his master Linnæus, which was requisite to make them clearly understood. Difficulties attending the study of these plants, the various seasons in which they require to be repeatedly scrutinized, and the obscurity or minuteness of the parts on which their differences depend, were by no means calculated to deter this laborious and accurate inquirer. He submitted the supposed varieties of the shrubbery, the kitchen garden, and even of the parterre, to the same rigorous examination, and, for the most part, with the happiest success. His discoveries have not received the notice they deserve, for his communications were deformed with asperity and pedantry; and he did not always keep in mind the concise and sober principles of definition, which his preceptor had both taught and practised, and to which he owed so large a share of his well-merited fame. Ehrhart died prematurely, but his name ought to be cherished among those whose talents have advanced science, and who loved nature, for her own sake, with the most perfect disinterestedness.

Swartz.

"The fate of Swartz has been far more propitious to himself and to the literary world. Having thrown more light upon the cryptogamic productions of Sweden and Lapland than they had previously received, and which has only been exceeded by the more recent discoveries of the unrivalled Wahlenberg, he undertook a botanical investigation of the West Indies. Carrying with him, to this promising field of inquiry, so great a store of zeal and practical experience, his harvest was such as might well have been anticipated. Whole tribes of vegetables, which the half-learned or half-experienced botanist, or the superficial gatherer of simples or flowers, had totally overlooked, now first became known to mankind. Tropical climates were now found to be as rich as the chill forests and dells of the north, in the various beautiful tribes of mosses; and the blue mountains of Jamaica rivalled its most fertile groves and savannahs in the beauty, variety, and singularity of their vegetable stores.

Thunberg.

"Nor must we pass over unnoticed the discoveries of another illustrious disciple of Linnæus, the celebrated Thunberg, who has now¹ for many years filled the professional chair of his master, with credit to himself, and advantage to every branch of natural science. The rare opportunity of examining the plants of Japan, and of studying at leisure the numerous and beautiful productions of the Cape of Good Hope, as well as of some parts of India, have thrown in the way of Professor Thunberg a greater number of genera, if not species of plants, than has fallen to the lot of most learned botanists; except only those who have gone round the world, or beheld the novel scenes of New Holland. These treasures he has contemplated and illustrated with great advantage, so far as he has confined himself to practical botany. We lament that he ever stepped aside to attempt any reformation of an artificial system. It is painful to complain of the well-meant though mistaken endeavours of so amiable and candid a veteran in our favourite science; but what we conceive to be the interests of that science must form our apology. We cannot but be convinced, and the experience of others is on our side, that discarding those principles of the Linnæan system which are derived from the *situation* of the several organs of impregnation, and making *number* paramount, has the most pernicious and inconvenient effect in most respects, without being advan-

tageous in any. This measure neither renders the system more easy nor more natural, but for the most part the reverse of both. We have elsewhere observed (*Introduction to Botany*, 3d ed. p. 358), that the amentaceous plants are of all others most uncertain in the number of their stamens, of which Linnæus could not but be aware. 'Even the species of the same genus, as well as individuals of each species, differ among themselves. How unwise and unscientific then is it, to take as a primary mark of discrimination, what nature has evidently made of less consequence here than in any other case!' When such plants are, in the first place, set apart and distinguished by their monœcious or diœcious structure, which is liable to so little objection or difficulty, their uncertainty with respect to the secondary character is of little moment; their genera being few, and the orders of each class widely constructed as to number of stamens. Linnæus, doubtless, would have been glad to have preserved, if possible, the uniformity and simplicity of his plan; but if he found it impracticable, who shall correct him? Such an attempt is too like the entomological scheme of the otherwise ingenious and able Fabricius. The great preceptor having arranged the larger tribes of animals by the organs with which they take their various food, and which are therefore accommodated to their several wants, and indicative of even their mental as well as constitutional characters, Fabricius his pupil would necessarily extend this system to insects. But nothing can be more misapplied. Feeding is not the business of perfect insects. Many of them never eat at all, the business of their existence through the whole of their perfect state being the propagation of their species. Hence the organs of their mouth lead to no natural distinctions, and the characters deduced therefrom prove, moreover, so difficult, that it is notorious they could not generally be applied to practice by Fabricius himself, he having, in the common course of his studies, been chiefly regulated by the external appearance of the insects he described. This external appearance, depending on the form and texture of their wings, and the shape of their own peculiar organs, the *antennæ*, affords in fact the easiest, as well as the most natural, clue to their arrangement and discrimination.

"As we presume to criticise the systematic errors of great practical observers, it cannot but occur to our recollection how very few persons have excelled in both these departments. Ray, Linnæus, and perhaps Tournefort, may be allowed this distinction. We can scarcely add a fourth name to this brief catalogue. The most excellent practical botanists of the Linnæan school have been such as hardly bestowed a thought on the framing of systems. Such was the distinguished Solander, who rivalled his preceptor in acuteness of discrimination, and even in precision and elegance of definition. Such is another eminent man, more extensively conversant with plants, more accurate in distinguishing, and more ready in recollecting them, than almost any other person with whom we have associated. Yet we have heard this great botanist declare, that however he might confide in his own judgment with regard to a species, or a genus of plants, he pretended to form no opinion of classes and orders. Men of so much experience know too much, to be satisfied with their acquirements, or to draw extensive conclusions from what they think insufficient premises. Others, with a quarter of their knowledge, find no difficulty in building systems, and proceed with great alacrity, till they find themselves encumbered with their own rubbish; happy

¹ Thunberg died at Upsal, on the 8th August 1828, in the 85th year of his age, having filled the botanical chair during half a century.

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if their doubts and uncertainties will afford them a tolerable screen or shelter! But we here anticipate remarks which will come with more propriety hereafter. We return from the consideration of the labours of particular botanists, to that of the diversities of nature and circumstance.

"While it is remarked that, in the cold regions of the north, the skill of the deep and learned botanist is chiefly exercised on the minute and intricate cryptogamic tribes, we are not to infer that nature is not everywhere rich in beauty and variety. Mosses and lichens afford inexhaustible amusement and admiration to the curious inquirer, nor are more gorgeous productions entirely wanting. Even Lapland boasts her *Pedicularis Sceptrum*, never seen alive out of her limits; and Siberia offers her own beautiful crimson *Cypripedium*, to console for a moment the miserable banished victims of imperial caprice. Kotzebue, though ignorant of botany, did not pass this lovely plant unnoticed, even in the height of his distress. The authoress of the pleasing little novel called *Elizabeth*, has represented in a just light the botanic scenery of that otherwise inhospitable country; yet it must be allowed that its rarities are not numerous, except perhaps in those microscopic tribes already mentioned.

New Holland.

"Let us in imagination traverse the globe, to a country where the very reverse is the case. From the representations or accounts that have been given of New Holland, it seems no very beautiful or picturesque country, such as is likely to form or to inspire a poet. Indeed the dregs of the community which we have poured out upon its shores, must probably subside, and purge themselves, before anything like a poet, or a disinterested lover of nature, can arise from so foul a source. There seems, however, to be no transition of seasons, in the climate itself, to excite hope, or to expand the heart and fancy; like a Siberian or Alpine spring, bursting at once from the icy fetters of a sublime though awful winter. Yet in New Holland all is new and wonderful to the botanist.¹ The most common plants there are unlike every thing known before, and those which at first sight look like old acquaintances, are found, on a near approach, to be strangers, speaking a different language from what he has been used to, and not to be trusted without a minute inquiry at every step.

Cape of Good Hope.

"The botany of the Cape of Good Hope, so well illustrated by Thunberg, and with the treasures of which he scattered a charm around the couch of the dying Linnæus, most resembles that of New Holland. At least these countries agree in the hard, rigid, dwarfish character of their plants. But the Cape has the advantage in general beauty of flowers, as well as in a transition of seasons. After the dry time of the year, when every thing but the *Aloe* and *Mesembryanthemum* tribes are burnt up, and during which innumerable bulbs are scattered, by the winds and driving sands, over the face of the country, the succeeding showers raise up a new and most beautiful progeny from those bulbs. The families of *Ixia*, *Gladiolus*, *Iris*, *Antholyza*, *Oxalis*, and many others, then appear in all their splendour. Some of them, the least gaudy, scent the evening

air with an unrivalled perfume; whilst others dazzle the beholder with the most vivid scarlet or crimson hues, as they welcome the morning sun.

"The lovely florae of the Alps and the Tropics contend, perhaps most powerfully, for the admiration of a botanist of taste, who is a genuine lover of nature, without which feeling, in some degree of perfection, even botany can but feebly charm. Of one of these the writer can speak from experience, of the other only by report; but he has had frequent opportunities of remarking, that the greatest enthusiasts in the science have been Alpine botanists. The expressions of Haller and Scopoli on this subject go to the heart. The air, the climate, the charms of animal existence in its highest perfection, are associated with our delight in the beauty and profusion of nature. In hot climates, the insupportable languor, the difficulty of bodily exertion, the usual ill health, and the effects of unwholesome instead of salutary fatigue, are described as sufficient to counterbalance even the pleasure which arises from the boundless variety, and infinite beauty, of the creation around. The flowery trees of a tropical forest raise themselves far above the human grasp. They must be felled before we can gather their blossoms. The insidious and mortal reptile twines among their boughs, and the venomous insect stings beneath their shade. We who enjoy the productions of these climates in peace and safety in our gardens, may well acknowledge our obligations to the labour and zeal of those who, by arduous journeys and painful researches, supply us with the riches of every country in succession. We do not indeed enjoy them in perfection, but we can study and investigate at leisure their various beauties and distinctions. We can compare them with our books, and profit by the acuteness of former observers. We can perpetuate, by the help of the pencil or the pen, whatever is novel or curious. We can preserve the plants and flowers themselves for subsequent examination, and return to them again and again in our closet, when winter has fixed his seal on all the instruction and pleasure afforded by the vegetable creation abroad. Yet let not the sedentary botanist exult in his riches, or rejoice too heedlessly in the abundance of his resources. A plant gathered in its native soil, and ascertained by methodical examination, is more impressed on the memory, as well as more dear to the imagination, than many that are acquired with ease, and named by tradition or report. The labours of its acquisition and determination enhance its value, and the accompaniments of delightful scenery, or pleasing society, are recollected, when difficulties and toils are forgotten.

"The western continent is, with respect to botany, almost a world in itself. There exists, indeed, a general affinity between the plants of North America and those of Europe, and many species of the arctic regions are the same in both; but there are few common to the more temperate climates of each. A considerable number, communicated by Kalm to Linnæus, which the latter considered as identified with certain well-known plants of our quarter of the world, prove, on more accurate examination, to be corresponding but distinct species. Instances occur in

¹ "These rare productions," speaking of palms and arborescent ferns, "of the vegetable kingdom, are, in all other countries, strictly tropical; and these 'weeds of glorious feature' have no business beyond the latitude of $23\frac{1}{2}^{\circ}$ from the equator, and yet here they are in $34\frac{1}{2}^{\circ}$. But this is New Holland, where it is summer with us when it is winter in Europe, and *vice versa*; where the barometer rises before bad weather, and falls before good; where the north is the hot wind, and the south the cold; where the humblest house is fitted up with cedar (*Cedrela Toona*, according to Mr Brown); where the fields are fenced with mahogany (*Eucalyptus robusta*), and myrtle trees (*Myrtaceæ*) are burnt for firewood; where the swans are black and the eagles white; where the kangaroo, an animal between the squirrel and the deer, has five claws on its fore-paws, and three talons on its hind-legs, like a bird, and yet hops on its tail; where the mole (*Ornithorhynchus paradoxus*) lays eggs, and has a duck's bill; where there is a bird (*Meliphaga*) with a broom in its mouth instead of a tongue; where there is a fish, one half belonging to the genus *Raja*, and the other to that of *Squalus*; where the pears are made of wood (*Xylomelum pyriforme*), with the stalk at the broader end; and where the cherry (*Exocarpius cypressiformis*) grows with the stone on the outside." (Field's *New South Wales*, p. 461.)

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the genera of *Carpinus*, *Corylus*, *Quercus*, as well as in the *Orchis* tribe, and others. These points of resemblance are found mostly among the vegetable productions of the eastern regions of North America. Mexico, and what little we know of the intermediate space, abound with different and peculiar productions. So, in South America, Peru, Guiana, Brazil, &c. have all their appropriate plants, of which we know as yet enough to excite our curiosity, rather than to satisfy it. Whatever has hitherto been given to the world respecting American botany, has had one considerable advantage. Each *Flora* has been founded on the knowledge and experience of some one or more persons, long resident, and in a manner naturalized, in the countries illustrated. Those regions commonly comprehended under the name of North America, have afforded materials for the *Flora Boreali-Americana* of Michaux, and the more complete and correct *Flora Americae Septentrionalis* of Pursh. Michaux, Wangenheim, and Marshall, have particularly illustrated the trees of those countries. But all these works have been enriched by the communications and assistance of men who had much more extensive and repeated opportunities of observation than their authors, except Mr Marshall, could have. Such are the venerable John Bartram, the Reverend Dr Muhlenberg, Messrs Clayton, Walter, Lyon, &c. The Mexican flora has received, for a long course of years, the attention of the able and learned Mutis, who long corresponded with Linnæus, and whose countrymen have prepared the sumptuous *Flora Peruviana*; each of the authors of which has repeatedly traversed, at various seasons, the rich and interesting regions, whose botanical treasures make so splendid and novel an appearance in those volumes. Of those treasures we have still more to learn from the unrivalled Humboldt.¹ The French botanist Aublet, after having gained considerable experience in the Mauritius, resided for many years in Cayenne and Guiana,

for the purpose of studying the plants of those countries, of which his work, in four quarto volumes, gives so ample a history and representation.

"All the writers just named have been practical botanists. They have generally excelled in specific discrimination, nor have they neglected the study of generic distinctions. Any thing further they have scarcely attempted. It is remarkable that they have all followed, not only the Linnæan principles of definition and nomenclature, but the Linnæan artificial system of classification. This same system was chosen by the veteran Jacquin, in his well-known work on West Indian plants, entitled *Stirpium Americanarum Historia*, as well as by Browne in his *History of Jamaica*; not to mention Swartz, in his *Flora Indica Occidentalis*, who only wanders a little out of the way, to adopt some of Thunberg's alterations. We cannot but observe, that in the very department of botany in which he has most signalized himself, and with which he is most philosophically conversant, the *Orchideæ*, he totally rejects the ideas of Thunberg.

"If we now turn our eyes to the oriental world, we shall find that the seeds of Linnæan botany, sown by Kœnig, have sprung up and produced successive harvests among the pious missionaries at Tranquebar, who still continue to interweave a sprig of science, from time to time, among their amaranthine wreaths which are not of this world. India too has long possessed a practical botanist of indefatigable exertion and ardour, who has thrown more light upon its vegetable riches, with the important subject of their qualities and uses, than any one since the days of Rheede and Rumphius. It is scarcely necessary to name Dr Roxburgh, whose recent loss we deeply lament, and whose acquisitions and learned remarks are given to the world by the munificence of the East India Company, in a style which no prince has ever rivalled.² That enthusiastic admirer of nature, Colonel Hardwicke, and the learn-

East Indies.

¹ Humboldt's splendid work, *Nova Genera et Species Plantarum Americae Æquinoctialis*, in seven volumes, containing several hundred plates, and descriptions of some thousands of new species, was completed in 1825. Since 1816 many other works on the plants of South America have been published, particularly illustrative of the Flora of Brazil. Of these, Pohl's, Martius', and St Hilaire's, are the most eminent.

² From the period in which the East India Company saw its sovereignty established in India with some security, it undertook, both for its own interest and that of humanity, as much as it possibly could, the promotion of the study and culture of the vegetables of that vast country. It, in consequence, directed its attention to the establishment of the Botanic Garden of Calcutta; and it was in March 1768, and under the direction of Colonel R. Kydd, that this garden commenced. A correspondence with all the Europeans settled in various parts of India speedily enriched it with some very precious plants, and there were in it about three hundred species when Dr Roxburgh took the superintendence, in the autumn of 1793. This botanist obtained new and more active correspondents, and visited personally the coast of Coromandel, and some other provinces of British East India. He succeeded in collecting together 3500 species into the garden, and of this number 1500 were previously unknown, but described by him. Such at least we learn from the catalogue of the garden, printed in 1814, at Serampore, by the care of Dr Carey, the friend of Roxburgh. This catalogue appeared in a very condensed shape; it makes known the botanical name, the Indian appellation, the locality, the time of introduction, and the period of inflorescence and fructification, of each plant; it is terminated by an appendix containing a list of other Indian plants, known to the author, but not then under cultivation. Roxburgh sent from time to time to the Company a great number of drawings and descriptions, and from these a selection was made and published under the direction of Sir Joseph Banks. This splendid work, the *Plants of Coromandel*, gives the history and coloured figure of 300 of the most beautiful or most useful of the Indian vegetables. But the very magnificence of this work placed limits to it, and therefore Dr Roxburgh projected a Flora of the East under a more simple form; unfortunately, however, his health forced him to leave India and return home in 1814. His *Indian Flora* was nevertheless not lost to science; Dr Carey published two volumes of it at Serampore, and added to those described by Roxburgh, such as were more lately discovered, both by himself and by Dr Wallich, Jack, and other botanists of British India. This only contains the first five classes of Linnæus.

After the death of Roxburgh, the management of the garden of Calcutta was intrusted to Dr Wallich, whose talents and activity, under the auspices of the Company, have raised the establishment to a high degree of prosperity. More than three hundred persons are employed in the garden, so that the naturalisation of useful objects, and preservation for study of the rare productions of the different parts of India, are equally attended to. Many assistants traverse the country at the expense of the Company, and, with unwearied zeal continue to enrich the garden and the herbarium. Dr Wallich himself travelled in 1820 throughout Nepaul, which, situated at the foot of the great mountains of Himalaya, presents a vegetation of a very different nature from that of Bengal. Since then, notwithstanding the severe disorders brought on by fatigue and the climate, he has visited Penang, Singapore, the kingdom of Ava, and several other parts of India; in addition, he sent collectors into various districts to which he could not go in person; so that, by these different means, a very considerable number of vegetables has been amassed. Descriptions of several of these have been given in the *Prodromus Floræ Nepalensis* of Don, and in other publications of a more general nature published in Europe. Wallich himself, as has been said, inserted many of his discoveries into the *Flora Indica*, and has besides commenced two other works for the purpose of making them better known. The one is the *Tentamen Floræ Nepalensis illustratæ*, which presents a detailed description and a lithographic figure of the principal plants of that country. Two numbers have appeared, each of twenty-five plates; which, in addition to their botanical interest, deserve to be noticed, as being the first attempts at lithographic botanical plates in India, and executed by

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ed botanist Dr Francis Buchanan, have also contributed greatly to increase our knowledge of Indian botany. The latter has enjoyed the advantage of investigating, for the first time, the remote and singular country of Nepaul, so prolific in beautiful and uncommon plants, that few parts of the world can exceed it; and yet meeting, in several points, not only the floras of the lower regions and islands of India, but those of Japan, China, and even Siberia. The only systematic work on East Indian plants, is the *Flora Indica* of Burmann, which is classed according to the Linnæan artificial method. We cannot but wish that it were more worthy of the system or the subject; yet, as a first attempt, it deserves our thanks. In speaking of Indian botany, shall we withhold our homage from that great and sublime genius Sir William Jones, who honoured this study with his cultivation, and, like every thing else that he touched, refined, elevated, and elucidated it? No man was ever more truly sensible of the charms of this innocent and elegant pursuit; and whenever he adverted to it, all the luminous illustrations of learning, and even the magical graces of poetry, flowed from his pen.

South Seas.

"But we must extend our view beyond the utmost bounds of India, and, of the then discovered world, to trace the steps of those adventurous circumnavigators who sought out, not only new plants, but new countries, for botanical examination. The names of Banks and Solander have, for nearly half a century, been in every body's mouth. Their taste, their knowledge, their liberality, have diffused a charm and a popularity over all their pursuits; and those who never heard of botany before, have learned to consider it with respect and admiration, as the object to which a man of rank, riches, and talents, devoted his life and his fortune; who, while he added, every season, something of novelty and beauty to our gardens, gave the bread-fruit to the West Indies, and was ever on the watch to prompt or to further any scheme of public advantage.¹ With the recollection of such men must also be associated the names of the learned Forsters, father and son, of Sparrmann, and of Menzies, who have all accomplished the same perilous course, and enriched their beloved science. The cryptogamic acquisitions of the latter in New Zealand prove him to have attended to that branch of botany with extraordinary success, and at the same time evince the riches of that remote country. Indeed, it appears that any country proves rich, under the inspection of a sufficiently careful investigator. The labours of these botanists have all been conducted according to the principles and classification of Linnæus. Forster, under Sparrmann's auspices, has judiciously pointed out, and attempted to remedy, defects which their peculiar opportunities enabled them to discover, but with no invidious aim. They laboured, not to overthrow or undermine a system, which they found on the whole to answer the purpose of readily communicating their discoveries, but to correct and strengthen it for the advantage of those who might come after them. It is much to be lamented that,

except the *Nova Genera Plantarum*, we have as yet so short and compendious an account of the acquisitions made in their voyage. To the technical history of these, however, the younger Forster has commendably added whatever he could supply of practical utility, and has thus given us all the information within the compass of his means.

"Long since the voyages of these celebrated naturalists, the same remote countries have been visited, in our own days, by two learned botanists more especially; these are M. Labillardière, and Mr Brown, librarian of the Linnæan Society. The former has published an account of the plants of New Holland, in two volumes folio, with fine engravings; the latter has favoured the botanical world with one volume of a most acute and learned *Prodromus* of his discoveries. As his voyage was made at the public expense, we may trust that the government will consider itself as bound to enable him to publish the whole of his acquisitions, in such a manner as to be generally useful. His own accuracy of observation, illustrated by the drawings of the inimitable Bauer, cannot fail to produce such a work as, we will venture to pronounce, has never been equalled. M. Labillardière has disposed his book according to the system of Linnæus; a rare example in France, where any thing not French usually comes but ill recommended. Mr Brown, on the other hand, has written his *Prodromus*, at least, on the principles of classification established by the celebrated Jussieu, the great champion of a natural system of his own. On this subject we postpone our remarks for the present. Before we can enter on the subject of natural classification, it is necessary to consider the state and progress of botany, for some years past, in the schools, and among the writers, of Europe.

"Sweden has continued to maintain her long established rank in the several departments of natural science, nor has Denmark been behind-hand with her neighbour and ancient rival. The son and successor of the great Linnæus endeavoured to follow his father's steps, and was ambitious of not being left very far in the rear; a commendable aim, which his short life, to say nothing of his talents or experience, disabled him from accomplishing. He completed and gave to the world, the unfinished materials which his father had left, for a supplement to his *Species Plantarum* and *Mantissæ*; and having enriched the book with many communications of Thunberg and others, as well as a number of original remarks, he felt a strong desire, not altogether unpardonable, of being thought the principal author of the work. All uncertainty on this subject, wherever other helps fail, is removed by the original manuscript of the *Supplementum Plantarum* in our possession. Ehrhart superintended the printing of this work, and made some alterations in the manuscript, traces of which are perceptible in the affected Greek names given to some species of *Carex*, *Mespilus*, &c., as well as in their sesquipedalian specific characters. But he had

native draughtsmen. The other work by Dr Wallich, much more splendid than the preceding, is destined to present the history and coloured figures of the rarer plants of Asia. This, the *Planta Asiatica rariores*, will form three volumes.

Besides, Roxburgh and Wallich, there are others who have been patronized by the Company. Koenig, Heyne, Carey, Patrick Russel, Rottler, Klein, Wight, Jack, Finlayson, &c. have traversed different parts of India with the view of studying its vegetation. For about half a century, all the collections of dried plants have been transmitted to England, and preserved in the Company's museum; and the immensity of these materials has made the Directors perceive that they would be useless without the co-operation of many naturalists. By a decision remarkable for its liberality, the Court of Directors has, therefore, lately given instructions to Dr Wallich, at present in London, to distribute these precious collections among the principal botanists of the present day; and the East India Company has thus acquired the most honourable claims on the gratitude of the men of science of every country. But if the thanks of naturalists be due to the Company in the first place, they are scarcely less so to Dr Wallich, who superintends the operation. Far from profiting by his situation to reserve for himself the publication of so much riches, he merely wishes to distribute them among others in the manner which he conceives most useful for the progress of natural history. His time in England, which he has a right to devote to his private affairs, and his valuable notes, are wholly at the service of others.

¹ Sir Joseph died on the 19th of March 1820. See Article BANKS, SIR JOSEPH.

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introduced his own new genera of Mosses; which the younger Linnæus thought so alarming an innovation, that he ordered the sheet containing these matters to be cancelled. We are possessed of a copy, which shows the genera in question to be almost all well founded, and what are now, under Hedwig's sanction, generally received, though by other names. The descriptions of Ehrhart are precise and correct, though his terminology is exceptionable, being full of innovations and crabbed expressions. Two years, almost immediately preceding the death of the younger Linnæus, were spent by the latter in visiting England, France, and Holland, and were employed to very great advantage, in augmenting his collections of natural productions, as well as his scientific skill. During this tour he attached himself strongly, through the medium of his old friend Solander, to Sir Joseph Banks; and, while in France, he almost planted, or at least greatly advanced, a Linnæan school in that kingdom. He had scarcely resumed his professorial office at home when he was unexpectedly taken off, by an acute disease, in his forty-second year. Of the talents and performances of his successor Thunberg, who still with honour fills the chair of the Rudbecks and the Linnæi, we have already spoken. Dr Swartz is the Bergian professor of botany at Stockholm. The *Transactions* of the Upsal Academy, founded by the younger Rudbeck, are continued occasionally; and those of the Stockholm Academy, whose foundations were laid by Linnæus, are published regularly. Both are from time to time enriched with botanical communications worthy of the pupils of so illustrious a school. A veteran in botanical science, Professor Retzius, still presides at the university of Lund. The worthy and accurate Afzelius, well known in England, who accomplished a hazardous botanical expedition to Sierra Leone, is the coadjutor of Professor Thunberg; and the difficult subject of Lichens, under the hands of Dr Acharius, has become so vast and so diversified as to be almost a science of itself.

“Denmark has always possessed some acute and learned botanists, and has, more than most other countries, been supplied with dried specimens of plants, as an article of commerce, from her West or East Indian establishments. Oeder, the original author of the *Flora Danica*, and Müller its continuator, have distinguished themselves; but their fame is inferior to that of the late Professor Vahl, who studied under the celebrated Linnæus, and is the author of several excellent descriptive works. He undertook no less than a new *Species*, or, as he entitled it, *Enumeratio Plantarum*; an admirable performance, cut short by his death at the end of the second volume, which finishes the class and order *Triandria Monogynia*. It is almost superfluous to mention, that Afzelius and Retzius, as well as Vahl, in all they have given to the world, have followed the system of their great master. The *Flora Danica*, chiefly a collection of plates, with few synonyms and no descriptions, has come forth, from time to time, for above fifty years past, in fasciculi, without any order, and is still incomplete. It was undertaken by royal command, and, in a great measure, at the sovereign's expense, though regularly sold, except some copies presented to certain distinguished men, as Linnæus.

“After the example of Denmark, Sweden, &c. Russia has been desirous of promoting, throughout its vast dependencies, an attention to natural knowledge. Nor was any country ever more fortunate in the possession of an active and intelligent naturalist. The celebrated Pallas successfully devoted a long life to these pursuits, and to

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the communication of his discoveries and observations. He prompted the Empress Catharine to offer an unlimited sum for the museum, library, and manuscripts of Linnæus; but, fortunately for their present possessor, the offer was made too late. A *Flora Rossica*, on the most magnificent scale, was undertaken by Pallas; his imperial mistress proposing to defray the cost of the whole undertaking, not merely for sale, but for gratuitous presentation, on the most princely scale, to all who had any taste or ability to make use of the book. This well-intended munificence was the cause of the ruin of the project. The first half volume was bestowed as the empress intended. But the second part, instead of following the destination of the first, got into the hands of interested people, who defeated the liberal designs of their sovereign, misapplied her money, and by the disgust and disappointment which ensued, prevented the continuance of the work. Those who wished to complete their sets, or to obtain the book at all, were obliged to become clandestine purchasers, buying as a favour, what they ought to have received as a gift; and were, moreover, like the writer of this, often obliged to receive imperfect copies. In like manner the intentions of the great Howard, respecting his book on prisons, were rendered ineffectual by the disgraceful avarice of certain London booksellers, who immediately bought up, and sold at a greatly advanced price, the whole edition, which its benevolent author had destined to be accessible to every body at an unusually cheap rate. These examples, amongst others, show that it is the most difficult thing in the world to employ patronage, as well as gratuitous charity of any kind, to real advantage, except under the guidance of the most rigorous discretion. ‘All that men of power can do for men of genius,’ says Gray, if we recollect aright, ‘is to leave them at liberty, or they become like birds in a cage,’ whose song is no longer that of nature and enjoyment. The great and the affluent may foster and encourage science and literature, by their countenance, their attention, and a free, not overwhelming, liberality; but when princes become publishers of books, or directors of academies, they generally do more harm than good. They descend from their station, and lose sight perhaps of their higher and more peculiar duties, which consist in promoting the general prosperity, peace, and liberty of their subjects, under the benign influence of which, every art, science, or pursuit, that can be beneficial to mankind, is sure to flourish without much gratuitous assistance.

“Several of the immediate scholars of the illustrious of Germany, Swedish naturalist were planted in different parts of Germany, many. Murray, to whom he intrusted the publication of that compendious volume entitled *Systema Vegetabilium*, and who printed two successive editions of the work, was seated as Professor at Göttingen. Giseke was established at Hamburg, and, after the death of Linnæus, gave to the world such an edition as he was able to compile, from his own notes and those of Fabricius, of the lectures of their late preceptor, on the natural orders of plants. His ideas on this subject Linnæus himself always considered as too imperfect to be published, except in the form of a sketch or index, at the end of his *Genera Plantarum*. The venerable patriarch, Professor Jacquin, still survives at Vienna, where he and his worthy son have enriched botany with a number of splendid and useful works. They have given to the public several labours of the excellent practical botanist Wulfen, and others, which might, but for their encouragement, have been lost. The highly va-

¹ At the present day, Sweden has to boast of Agardh and Fries, the former of whom has published many erudite works on the *Alga*, the latter on *Fungi*.

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luable publication of Host on grasses is conducted on the plan of Jacquin's works. His *Synopsis* of Austrian plants is an excellent *Flora*, disposed according to the sexual system; as is the more ample *Tentamen Floræ Germanicæ* of the celebrated Dr Roth, one of the best practical European botanists, and more deeply versed than most others in cryptogamic lore. The best Linnæan *Flora*, as far as it goes, that the world has yet seen, we speak it without any exception, is the *Flora Germanica* of Professor Schrader of Göttingen, the first volume of which, comprising the first three classes of the sexual system, was published in 1806. The correct distinctions, well-digested synonyms, and complete descriptions, of this work, are altogether unrivalled. If the whole should be equally well executed, for which the longest life would be scarcely sufficient, it must ever be the standard book of European botany. Its descriptions of grasses are worthy to accompany the exquisite engravings of the same tribe from the hand of Leers, published at Herborn in 1775, which excel every botanical representation which we have yet examined. They will bear, and indeed they require, the application of a magnifying-glass, like the plants themselves. The purchaser of this little volume must however beware of the second edition, the plates of which are good for little or nothing. The name of Schrader has long been distinguished in cryptogamic botany. In this pursuit, the industrious and accurate botanists of Germany, shut out from extensive opportunities of studying exotic plants, have had full scope for their zeal and abilities. In this field the Leipsic school has distinguished itself. Here the great Schreber first began his career with some of the most perfect cryptogamic works, especially on the minute genus *Phascum*. Here the same author published his excellent *Flora Lipsiensis*, his laborious practical work on Grasses, and finally his improved edition of the *Genera Plantarum* of his friend Linnæus. But, above all, Leipsic is famous for being the residence of Hedwig, whose discoveries relative to the fructification and generic characters of Mosses form an era in botanic science. Under the hands of such an observer, that elegant tribe displays itself with a degree of beauty, variety, and singularity, which vies with the most admired herbs and flowers, and confirms the Linnæan doctrine of impregnation, which the more obvious organs of the latter had originally taught. Nor must we, in speaking of cryptogamic plants, neglect here to record the names of Weiss, Weber, Mohr, Schmidel, Esper, and especially Hoffmann; the plates of the latter, illustrating the Lichen tribe, are models of beauty and correctness. His *Flora Germanica* is a most convenient and compendious manual, after the Linnæan system. *Fungi* have been studied in Germany with peculiar care and minuteness. The leading systematic author in this obscure tribe, Persoon, was indeed born of Dutch parents, at the Cape of Good Hope; but he studied and published at Göttingen. Two writers of the name of Albertini and Schweiniz have published the most minute and accurate exemplification of this natural order, in an octavo volume, at Leipsic, in the year 1805, comprising the *Fungi* of the district of Niski in Upper Lausatia. If their figures are less exquisitely finished than Persoon's, or less elaborately detailed than Schrader's, their descriptions make ample amends.

"The German school of botany has for a long period been almost completely Linnæan. This however was not always the case; for, in the earlier part of his career, the learned Swede was attacked more repeatedly and severely from this quarter of the world than from any other; his ridiculous critic Siegesbeck of Petersburg excepted, who would not admit the doctrine of the sexes of plants, because the pollen of one flower may fly upon another,

and his purity could not bear the idea of such adultery in nature. Numerous methods of arrangement appeared in Germany, from the pens of Heister, Ludwig, Haller, and others, and even Schreber adopted a system like some of these in his *Flora* above mentioned. It would be to no purpose now to criticise these attempts. They cannot rank as natural systems, nor have they the convenience of artificial ones. Part of their principles are derived from Linnæus, others from Rivinus. Their authors were not extensively conversant with plants, nor trained in any sound principles of generic discrimination or combination. They set off with alacrity, but were soon entangled in their own difficulties, and were left by Linnæus to answer themselves or each other. We here mention these learned systematics; for learned they were thought by themselves and their pupils, merely because they will scarcely require animadversion when we come to canvass the great question of natural and artificial classification, they having had no distinct ideas of a difference between the two. Hedwig used frequently to lament that his preceptor Ludwig had never perfected his system of arrangement; but from what he has given to the world, we see no great room to suppose that he had any thing very excellent in reserve. Unexecuted projects are magnified in the mists of uncertainty. We have ventured elsewhere, in a biographical account of Hedwig, to remark, that even that ingenious man 'did not imbibe, under Ludwig, anything of the true philosophical principles of arrangement, the talents for which are granted to very few, and are scarcely ever of German growth. We mean no invidious reflections on any nation or people. Each has its appropriate merits, and all are useful together in science, like different characters on the theatre of human life.'

"Germany may well dispense with any laurels obtained by the very secondary merit of speculative schemes of classification, when she can claim the honour of having produced such a practical observer as Gärtner. This indefatigable botanist devoted himself to the investigation of the fruits and seeds of plants. Being eminently skilled in the use of the pencil, he has, like Hedwig, faithfully recorded what he no less acutely detected. The path he struck out for himself, of delineating and describing in detail, with magnified dissections, every part of the seed and seed-vessel of each genus within his reach, had never been explored before in so regular and methodical a manner. Botanists of the Linnæan school are justly censurable for having paid too little attention to the structure of these important parts, in their generic characters. Indeed it may be said, that if they were able to establish good genera without them, and, after the example of their leader, merely preferred the more obvious and distinct organs, when sufficient for their purpose, their conduct was justifiable. If generic principles be natural and certain, it matters not on what parts of the fructification they are founded; nor is the inflorescence, or even the herb or root, rejected by sound philosophers, but because they are found to lead only to unnatural and uncertain characters. It is therefore extremely to the honour of Linnæus, Gärtner, and Jussieu, that their conceptions of genera are almost entirely the same. They meet in almost every point, however different the paths by which they pursue their inquiries. Their labours illustrate and confirm each other. Even Tournefort, who conceived so well, on the whole, the distinctions of genera, which he could but ill define, receives new strength from their knowledge, which does not overturn his imperfect performances, but improve them. The accurate student of natural genera cannot fail to perceive, that where Gärtner differs from Linnæus, which is but in a very few material instances, such as his numerous subdivision of the genus *Fumaria*, and his dis-

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tribution of the compound flowers, it arises from his too intent and exclusive consideration of one part of the fructification, instead of an enlarged and comprehensive view of the whole. In other words, he neglects the Linnæan maxim, that 'the genus should give the character, not the character the genus.' Such at least appears to us the case in *Fumaria*.¹ In the syngenesious family, being so very natural in itself, the discrimination of natural genera becomes in consequence so difficult, that Gærtner and Linnæus may well be excused if they do not entirely agree; and they perhaps may both be satisfied with the honour of having collected materials, and disposed them in different points of view, for the use of some future systematist, who may decide between them. However exact Gærtner may have been in discriminating the parts of seeds, we believe him to have been mistaken in distinguishing the *vitellus* as a separate organ, distinct in functions from the *cotyledons*. His readers will also do well, while they profit by his generally excellent principles, not to admit any of his rules as absolute. They may serve as a clue to the intricacies of nature, but they must not overrule her laws. Still less is our great carpologist to be implicitly followed in physiological doctrines or reasonings; witness his feeble and incorrect attack on Hedwig's opinions, or rather demonstrations, respecting the impregnation of Mosses. His criticisms of Linnæus are not always marked with that candour which becomes a disinterested lover of truth and nature; nor can we applaud in general his changes of nomenclature or of terminology, especially when he unphilosophically calls the *germen* of Linnæus the *ovarium*, a word long ago rejected, as erroneous when applied to plants.² These however are slight blemishes in a reputation which will last as long as scientific botany is cultivated at all. Botanists can now no longer neglect, except at their own peril, the parts which Gærtner has called into notice, and to the scrutiny of which, directed by his faithful guidance, the physiologist and the systematist must often in future recur.

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"We shall close this part of our subject with the mention of the Berlin school, where Gleditsch, who, in 1740, repelled the attacks of Siegesbeck on Linnæus, was professor, and published a botanical system, founded on the situation, or insertion, of the stamens; the subordinate divisions being taken from the number of the same parts; so that it is, in the latter respect, a sort of inversion of the Linnæan method. In the former, or the outline of its plan, the system of Gleditsch is in some measure an anticipation of that of Jussieu. Berlin has of late been much distinguished for the study of natural history, and possesses a society of its own, devoted to that pursuit. Its greatest ornament was the late Professor Willdenow, who, if he fell under the lash of the more accurate Afzelius, is entitled to the gratitude of his fellow-labourers, not for theoretical speculations, but for the useful and arduous undertaking of a *Species Plantarum*, on the Linnæan plan, being indeed an edition of the same work of Linnæus, enriched with recent discoveries. This book, left unfinished at the end of the first order of the *Cryptogamia*, by the death of the editor, wants only a general index to render it sufficiently complete. The *Musei*, *Lichenes*, and *Fungi*, are systematically treated in the separate works of writers devoted to those particular, and now very extensive, subjects, from whom Willdenow could only have been a compiler. With the *Filices*, which he lived to publish, he was practically conversant. His inser-

tion of the essential generic characters, throughout these volumes, is a useful addition, and has now become necessary in every similar undertaking.

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"Little can be said of Holland in this review of the botanical state of Europe for a few years past. The Leyden garden has always been kept up, especially during the life of the late Professor David Van Royen, with due care and attention: we know little of its fate in the subsequent convulsed state of the country. Botany has long been on the decline at Amsterdam, though we are indebted to that garden for having first received, and afterwards communicated to other countries, such acquisitions of Thunberg in Japan as escaped the perils of importation.

"The botany of Switzerland may, most commodiously, of Switzerland be considered in the next place. Here, in his native land, country, the great Haller, after a long residence at Göttingen, was finally established. Its rich and charming *Flora* has been illustrated by his classical pen, with peculiar success. Every body is conversant with the second edition of his work, published in 1768, in three volumes folio, and entitled *Historia Stirpium Indigenarum Helvetiæ*, with its inimitable engravings, of the *Orehis* tribe more particularly. But few persons who have not laboured with some attention at the botany of Switzerland, are aware of the superior value, in point of accuracy, of the original edition of the same work, published in 1742, under the title of *Enumeratio Methodica Stirpium Helvetiæ Indigenarum*. This edition is indispensable to those who wish fully to understand the subject, or to appreciate Haller's transcendent knowledge and abilities. These works are classed after a system of his own, intended to be more consonant with nature than the Linnæan sexual method. We can scarcely say that it is so, on the whole; nor is it, on the other hand, constructed according to any uniformity of plan. The number of the stamens, compared with that of the segments of the corolla, or its petals, regulate the characters of several classes, and these are artificial. Others are assumed as natural, and are for the most part really so; but their characters are frequently taken from Linnæus, even from his artificial system, as the *Cruciatæ* and the *Apetalæ*. Lord Bute has well said, that Haller was a Linnæan in disguise. His classification, however, was merely intended to answer his own purpose with respect to the Swiss plants; for he was not a general botanist, nor had he a sufficiently comprehensive view of the subject to form a general system, or even to be aware of the difficulties of such an undertaking. He ought not therefore to be obnoxious to criticism in that view. His method has served for the use of his scholars, as the Linnæan one serves English botanists, by way of a dictionary. Some such is necessary; and those who should begin to decide on the merits of a system, before they know plants, would most assuredly be in danger of appearing more learned to themselves than to others. We cannot exculpate Haller from some degree of prejudice in rejecting real improvements of Linnæus, which are independent of classification; such as his trivial or specific names, by which every species is spoken of at once, in one word, mostly so contrived as to assist the memory, by an indication of the character, appearance, history, or use, of the plant. What did the great Swiss botanist substitute instead of this contrivance? A series of numbers, burthensome to the memory, destitute of information, accommodated to his own book only, and necessarily liable to

¹ Most modern botanists view the Linnæan genus *Fumaria* as a natural order, and have therefore properly adopted Gærtner's divisions as distinct genera.

² Notwithstanding the above opinion to the contrary, *ovarium* is now generally adopted instead of *germen*.

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total change on the introduction of every newly-discovered species! At the same time that he rejected the luminous nomenclature of his old friend and fellow-student, who had laboured in the most ingenuous terms to deprecate his jealousy, he paid a tacit homage to its merit, by contending that the honour of this invention was due to Rivinus. In this he was not less incorrect than uncandid, the short names of Rivinus being designed as specific characters, for which purpose Haller knew, as well as Linnæus, that they were unfit. Useful specific characters he himself constructed on the plan of Linnæus, with some little variation, not always perhaps for the better as to strictness of principle, but often strikingly expressive. Here, as in every thing connected with practical botany, he shines. The most rigid Linnæan, whose soul is not entirely shrivelled up with dry aphorisms and prejudice, must love Haller for his taste and enthusiasm, and the Flora of Switzerland as much for his sake as its own. No wonder that his pupils multiplied, and formed a band of enthusiasts, tenacious of even the imperfections of their master. The line of demarcation is now no longer distinctly drawn between them and the equally zealous scholars of the northern sage. The amiable and lamented Davall strove to profit by the labours of both. The Alpine botanists of France and Italy have served to amalgamate the Swedish and the Helvetian schools. The Flora of Dauphiné by Villars is nearly Linnæan in system; and the principles of the veteran Bellardi of Turin are entirely so, though, in some of his publications, he has been obliged to conform to the method of his preceptor, the venerable Allioni, who, in spite of all remonstrance, had the ambition of forming a system of his own. His *Flora Pedemontana* is disposed according to this system; an unnatural and inconvenient jumble of the ideas of Rivinus, Tournefort, and others. This work is also faulty in the neglect of specific definitions, so that its plates and occasional descriptions are alone what render it useful; nor would it, perhaps, be consulted at all, but for the uncommon abundance of rare species.¹

of Italy,

"We may glance over the botany of Italy, to whose boundaries we have thus been insensibly led, as the traveller takes a bird's-eye view of its outstretched plains from the lofty summits of the Alps. We may pass from Turin to Naples without meeting with any school of distinction. The northern states are not without their professors and patrons of botany; nor are their nobles destitute of taste, in various branches of natural knowledge. The names of a Castiglione of Milan, a Durazzo and Dinegro of Genoa, and a Savi of Pisa, deserve to be mentioned with honour, for their knowledge and their zeal. The unfortunate Cyrillo, and his friend Pacifico, of Naples, were practical botanists. There is also a rising school, of great promise, at Palermo. But since the time of Scopoli, Italy has contributed little to our stock of information; nor are the latter publications of this eminent man, while he resided at Pavia, commensurate in importance or merit with those earlier ones, the *Flora* and the *Entomologia Carniolica*, which have immortalized his name. Scopoli, who at first adopted a system of his own, had the sense and liberality, in his second edition, to resign

it in favour of what his maturer experience taught him to prefer, the sexual system of Linnæus.²

"Spain and Portugal claim our attention; the former for being the channel through which the gardens of Europe have, for some years past, been enriched with many new Mexican and Peruvian plants, and likewise as the theatre of the publication of some important books relative to the botany of those countries. In speaking of American botany, we have mentioned the *Flora Peruviana*, the authors of which, Ruiz and Pavon, rank deservedly high for their industry and knowledge. The late Cavanilles, resident at Madrid, has also communicated to the learned world much information, from the same source. Spain seems anxious to redeem her reputation, which suffered so much from the neglect, or rather persecution, of the truly excellent but unfortunate Dombey, who, like many other benefactors of mankind, was allowed to make all his exertions in vain, and finally perished unknown, in the diabolical hands of English slave-dealers at Montserrat.³ Portugal is most distinguished at home by the labours of a learned benedictine, Dr Felix Avellar Brotero, author of a *Flora Lusitana*, disposed after the Linnæan method, reduced entirely to principles of number; and abroad by the valuable work of Father Loureiro, entitled *Flora Cochinchinensis*, in which the plants of Cochinchina, and of the neighbourhood of Canton, are classed and defined in the Linnæan manner, with valuable descriptions and remarks. It is undoubtedly a disgrace to the possessors of such a country as Brazil, that they have not derived from thence more benefit to the world or to themselves from its natural productions. But they are satisfied with what the bowels of the earth afford, and they neglect its more accessible, though perhaps not less valuable treasures. The jealousy and innumerable restrictions of their government render what they possess as useless to all the world as to themselves. A genius of the first rank in natural science, as well as in every thing which his capacious mind embraced, has arisen in Portugal, and has been domesticated in the schools of Paris and London, the amiable and learned Correa de Serra. What little impulse has been given to literature in Portugal, and particularly the foundation of a Royal Academy of Sciences, is owing to him; and though his name has chiefly appeared in the ranks of botanical science in an incidental manner, no one possesses more enlarged and accurate views, or more profound knowledge, of the subject.

"In the extensive, though incomplete, review which we English have undertaken of the recent history of botanical science, and the individual merits of particular writers have chiefly hitherto been detailed and compared. The most difficult part of our task perhaps still remains, namely, to contrast and appreciate the influence and the merits of two great and rival nations, in the general school of scientific botany; to consider the causes that have led to the particular line which each has taken; and to compare the success, as well as to calculate the probable future consequences, of their respective aims. England and France have, from the time of Ray and Tournefort, been competitors in botanical fame, because each was ambitious of supporting the credit of the great man she had produced. This contest,

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¹ Geneva is celebrated at the present day as the residence of Professor De Candolle. This distinguished botanist, in addition to many other works of scarcely inferior merit, published, in 1818 vol. 1st, and in 1821 vol. 2d, of a *Regnum Vegetabile*, arranged according to the natural system. No more has yet appeared; but in 1824 he commenced a *Prodromus*, or abridgement of what the other was intended to be; and of this four volumes are completed. It is expected to be concluded in a few years.

² Raddi, Tenore, Viviani, and the Sicilian botanist Gussone, had scarcely, at the time when Sir J. E. Smith wrote this, gained sufficient fame to be noticed by him.

³ Had Sir James Smith lived, he would have found occasion to alter the above paragraph. At present there is not one individual deserving the name of botanist in Spain. The last of them, Lagasca, has had all his collections, including what he had amassed for years with a view to publish a Flora of Spain, entirely destroyed, and been obliged himself to take refuge in England.

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however, as far as it regarded theoretical speculations, has entirely subsided on the part of Ray's champions. In practical science, likewise, the admirers of Ray and of Tournefort have shaken hands, like those of every other school. On the subject of system, the question is greatly changed; for though a phoenix has arisen from the ashes of Tournefort, its 'star-like eyes,' darting far beyond all former competition, have been met, if not dazzled, by a new light, rising in full glory from the north; a polar star, which has been hailed by all the nations of the earth.

England.

"The Linnæan system of classification, with all its concomitant advantages of nomenclature, luminous technical definition, and richness of information, was planted, like a fresh and vigorous scion, in the favourable soil of England, already fertilized with accumulations of practical knowledge, about the middle of the last century. If we may pursue the metaphor, the ground was entirely cleared for its reception; for all previous systems had been of confined and local use, the alphabetical index having become the resource of even the most learned, and the pupils of Ray being held to his method of classification rather by their gratitude for his practical instruction, than any other consideration. Accordingly we have, in our own early progress, before they were all, as at present, swept off the stage, found them rather contending for his nomenclature, imperfect as it was, because they were habituated to it, than for his system, of which it was evident they had made little use. Hence the first attempt in England to reduce our plants to Linnæan order, made by Hill, was chiefly a transposition of Ray's *Synopsis* into the Linnæan classes; the original nomenclature being retained, while the specific names of the *Species Plantarum* were rejected.

Norwich.

"Hill's imperfect performance was superseded by the more classical *Flora Anglica* of Hudson, composed under the auspices and advice of the learned and ingenious Stillingfleet, in which the botany of England assumed a most scientific aspect, and with which all the knowledge of Ray was incorporated. At the same time, the principles of theoretical botany, and the philosophical writings of the learned Swede, were studied with no ordinary powers of discrimination and judgment, in a small circle of experienced observers at Norwich. A love of flowers, and a great degree of skill in their cultivation, had been long ago imported into that ancient commercial city, with its worsted manufacture, from Flanders; and out of this taste something like the study of systematic botany had sprung. These pursuits were mostly confined to the humblest of the community, particularly among the then very numerous bodies of journeymen weavers, dyers, and other artisans of a similar description. Towards the middle of the eighteenth century, several of the opulent merchants seem to have acquired, by their intimate connection with Holland, not only the above-mentioned taste for horticulture, but likewise an ambition to be distinguished by their museums of natural curiosities. The former sometimes extended itself, from the flowery parterre and the well-arranged rows of tulips, hyacinths, carnations, and auriculas, into no less formal labyrinths, or perhaps a double pattern of angular or spiral walks, between clipped hedges, exactly alike on each side of a broad gravel walk. Such was the most sublime effort of the art within the compass of our recollection. "Grove" could by no means be said to "nod at grove," for the perpendicular and well-trimmed structure was incapable of nodding; but that "each alley should have a brother" was an indispensable part of the design. Greenhouses of exotic plants, except oranges and myrtles, were at this time scarcely known; and the writer well recollects having seen, with wonder and admiration, above forty years

ago, one of the first African geraniums that ever bloomed in Norwich. If, however, the progress of natural science was slow in this angle of the kingdom, the wealthy manufacturers, become their own merchants, found it necessary to acquire a knowledge of various foreign languages, in order to carry on their wide-extended commerce. In learning French, Italian, Spanish, Dutch, and German, they unavoidably acquired many new ideas. Their sons were sent to the continent, and it were hard, indeed, if many of them did not bring home much that was worth learning. The society of the place, aided by some concomitant circumstances, and the adventitious acquisition of two or three men of singular talents and accomplishments, became improved. A happy mixture of literature and taste for many years distinguished this city above its rivals in opulence and commercial prosperity. Such Norwich has been in our memory; and if its splendour be gone by, a taste for mental cultivation, originating in many of the before-mentioned causes, still remains, and is fostered by the novel pursuits of chemistry and natural history, on which some arts of great importance in the manufactory of the place depend for improvement. We trust the reader will pardon this digression from the subject more immediately before us, to which we shall now return.

"Some of the more learned students of English plants, among the lovers of botany in Norwich, had long been conversant with the works of Ray, and even the *Historia Muscorum* of Dillenius. They were prepared therefore to admire, and to profit by, the philosophical writings of Linnæus. Hence originated the *Elements of Botany*, published in 1775 by Mr Hugh Rose, who was aided in the undertaking by his equally learned friend, the reverend Henry Bryant, of whose acuteness and botanical skill no better proof is wanting, than his having found and determined, nine years before, the minute *Tillæa muscosa*, for the first time in this island. Numerous pupils were eager to improve themselves by the assistance of such masters; and, amongst others, the writer of these pages imbibed, from their ardour and friendly assistance, the first rudiments of a pursuit that has proved the happiness and the principal object of his life.

"London became, of course, the focus of this science, as well as of every other. Of the English universities, Cambridge most fulfilled its duty, in rendering its public establishments useful to the ends for which they were founded and paid. The names of Martyn, both father and son, have long maintained a distinguished rank in botany; and the latter, for many years, has inculcated the true principles of Linnæan science, from the professor's chair. A botanic garden was established by a private individual, Dr Walker, about the period of which we are speaking. A Linnæan *Flora Cantabrigiensis*, by Mr Relhan, has renewed the celebrity of that field in which Ray had formerly laboured; and there has always existed a little community of Cambridge botanists, though fluctuating and varying, according to circumstances. At Oxford, botany, so vigorously established by Sherard and Dillenius, slept for forty years under the auspices of the elder Professor Sibthorp, at least as to the utility of its public foundations. Yet even there the science had many individual cultivators, and if others were forgotten, the name of a Banks ought to render this school for ever celebrated. The younger Professor Sibthorp well atoned for the supineness of his father and predecessor. He published a *Flora Oxoniensis*, and extended his inquiries into the classical scenes of Greece, finally sacrificing his life to his labours, and sealing his love of this engaging study by a posthumous foundation, which provides for the publication of a sumptuous *Flora Græca*, and the subsequent establishment of a professorship of rural economy. Edinburgh, under the aus-

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pices of Professor Hope, became distinguished for the cultivation of botany as a branch of medical education. The physiology of plants was there taught more assiduously than in almost any other university of Europe; and the Linnæan principles were ably enforced and illustrated, not with slavish devotion, but with enlightened discrimination. Nor must the dissenting academy at Warrington be forgotten, where the distinguished circumnavigator Forster, of whom we have already spoken, was settled. Here many young naturalists were trained. The neighbouring family of the Blackburnes, possessed even to this day of one of the oldest and richest botanic gardens in England, have steadily fostered this and other branches of natural knowledge. The same taste has spread to Manchester, Liverpool, and the country around. Westmoreland, Northumberland, and Durham, have their sequestered practical botanists in every rank of life. Scenes celebrated by the correspondents of Ray are still the favourite haunts of these lovers of nature and science, who every day add something to our information, and to the celebrity of other parts of the same neighbourhood.

London school.

"We must now concentrate our attention to the London school, which for about forty years past has maintained a rank superior to most other seats of botanical science; the more so perhaps from its being founded in total disinterestedness, both with respect to authority and emolument. Truth alone, not system, has been the leading object of this school; unbiassed and gratuitous patronage its support; and a genuine love of nature and of knowledge its bond of union, among persons not less distinguished from each other by character and opinion, than by their different pursuits and various ranks of life. The illustrious Banks, from the time when, after his return from his celebrated and adventurous voyage, he devoted himself to the practical cultivation of natural science for the advantage of others, as he had long pursued it for his own pleasure and instruction, has been the head of this school. Here he fixed the amiable and learned Solander, for the remainder of his too short life. The house of this liberal Mecænas has ever since been, not only open, but in a manner at the entire command of the cultivators and admirers of this and other branches of philosophy; inasmuch as his library and museum have been devoted to their free use; and his own assistance, encouragement, and information are as much at their service as if his fortune and fame had all along depended on their favour. With such an establishment as this, aided by the perpetual resources of the numerous public and private gardens around, botany might well flourish. The liberal spirit of the leaders of this pursuit gave a tone to the whole. The owners of nurseries, though depending on pecuniary emolument for their support, rivalled each other in disinterested communication. The improvement of the science was the leading object of all. One of this latter description took his rank among the literary teachers of botany. Lee's *Introduction* was much approved by Linnæus, whose system and principles it ably exemplifies, and who became the friend and correspondent of its author. Travelling botanists were dispatched under the patronage of the affluent to enrich our gardens from the Alps, the Cape of Good Hope, and the various parts of America. Every new acquisition was scrutinized, and received its allotted name and distinction from the hand of the correct and classical Solander, who one day was admiring with Collinson, Fothergill, or Pitcairn, the treasures of their respective gardens, and another labouring with the distinguished Ellis,

at the more abstruse determination of the intricate family of marine productions, whether sea-weeds, corallines, or shells. His own acquisitions, and those of his friend and patron, in the fairy land of the South Sea Islands, the hazardous shores of New Holland, or the nearly fatal groves and swamps of Java, were at the same time recorded by his pen, as they were gradually perpetuating by the slow labours of the engraver. To this band of zealous naturalists the younger Linnæus was for a while associated, as well as the excellent and zealous Broussonet, who, though not unversed in botany, devoted himself most particularly to the more uncommon pursuit of scientific ichthyology.

"The Banksian school, altogether intent upon practical botany, had adopted the Linnæan system as the most commodious, while it pursued and cultivated the Linnæan principles as the only ones which, by their transcendent excellence, could support the science of botany on a stable foundation. In these Dr Solander was, of course, well trained; and, having added so wide a range of experience to his theoretical education, few botanists could vie with him, who had, as it were, caught his preceptor's mantle, and imbibed, by a sort of inspiration, a peculiar talent for concise and clear definition. Abstract principles of classification, or even such outlines of natural arrangement as Linnæus had promulgated, seem never to have attracted Solander. In following the chain of his ideas, discernible in the materials he has left behind him, one cannot but remark his singular inattention to every thing like botanical affinity, to which the artificial sexual system was, with him, entirely paramount. The genera which, for extemporaneous use, he named with the termination *oides*, comparing each with some well-known genus, till a proper appellation could be selected, are seldom thus compared because of any natural affinity, or even any external resemblance, but because they agree with such in their place in the artificial system, or nearly perhaps in technical characters. A great botanist, therefore, it is evident, may exist, without that vaunted erudition in a peculiar line, which some would have us consider as the only road to knowledge and to fame. We allow that this sort of erudition is now, since the attention it has received from Linnæus, Jussieu, and others, become as indispensable to a good theoretical or philosophical botanist, as is the study of carpology, in consequence of the labours of Gærtner; we only contend that it is possible to know plants extremely well without either.

"The learned Dryander, less skilled than his predecessor the coadjutor of Sir Joseph Banks, in a practical acquaintance with plants, exceeded him in theoretical lore and ingenious speculation, and far excelled every other man in bibliographic information, as well as in the most precise and fastidious exactness relative to every subject within the wide extent of his various knowledge. He furthered, upon principle, and with unwearied assiduity, every object of the noble establishment to which he was devoted; but, like Solander, he now sleeps with his fathers, and his place is supplied by a genius of British growth, who unites talents with experience, and theoretical skill, in the most eminent degree, with practical knowledge.¹

"Although it is almost superfluous to name the most eminent disciples of the London school of botany, it might seem negligent to pass them over without some particular mention. The ardent and ingenious Curtis has left a permanent monument behind him, in the *Flora Londinensis*, to say nothing of the popular *Botanical Magazine*, continued

¹ Since the death of Sir Joseph, his library and herbarium have been deposited in the British Museum, where Mr Brown, to whom Sir James here alludes, has still the unqualified charge of them.

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by his friend Dr Sims. The *Flora Scotica* of Lightfoot first offered, in a pleasing and familiar garb, the botanical riches of that part of the island to its southern inhabitants. The lynx-eyed Dickson, so long and faithfully attached to his constant patron, has steadily traced, through all its windings, the obscure path of cryptogamic botany with peculiar success. No more striking instance can be pointed out, to prove how totally the most consummate practical skill, even in the most difficult part of botany, is independent of theoretical learning. Even those who profit by the certain aids supplied by the discoveries of Hedwig, can with difficulty keep pace with this veteran in their pursuits, who, with conscious independence, neglects all those aids.

Museum and library of Linnæus.

"Just at the time when the school, whose history we are endeavouring to trace, had most firmly established its credit and its utility, a great additional weight was given to England, in the scale of natural science, by the acquisition of the entire museum, library, and manuscripts of the great Linnæus and his son, which came amongst us, by private purchase, in 1784, after the death of the latter. Hence our nomenclature has been corrected, and our knowledge greatly augmented. These collections have necessarily been consulted by most persons about to publish on the subject of natural history, and a reference to them, in doubtful cases, secures a general conformity of sentiment and nomenclature among the botanists of Europe, Asia, and America. We are seldom obliged to waste time in conjecturing what Linnæus, or the botanists with whom he corresponded, meant, for we have before us their original specimens, named by their own hands. An entire London winter was devoted to the almost daily labour of comparing the Banksian herbarium throughout, with that of Linnæus, and to a copious interchange of specimens between their respective possessors, who, with the aid of Mr Dryander alone, accomplished this interesting and instructive comparison. Hence the *Hortus Kewensis* of the lamented Aiton, which was at that period preparing for publication, became much more correct in its names, than it, or any other similar performance, could have been, without this advantage. It could scarcely be expected that Sweden would, unmoved, let the botanical sceptre thus pass from her; but it is much to the honour of the nation, that all her naturalists have ever preserved the most friendly intercourse with us, particularly with the person who deprived them of this treasure. They have not merely pardoned, but publicly sanctioned, the scientific zeal which prompted him to this acquisition, by associating him with all their learned establishments, without any solicitation on his part.¹

Linnæan Society.

"The institution of the Linnæan Society at London in 1788, especially under that name, must be considered as a triumph for Sweden in her turn. By this establishment the intercourse of science is facilitated; essays, which might otherwise have never seen the light, are given to the world; and a general taste for the pleasing study of nature is promoted. Learned and worthy people are thus made acquainted with each other, from the remotest corners of the kingdom, and their information enriches the common stock. The state has given its sanction to this rising establishment. Its publications and its members are spread over the Continent, and other similar institutions have borrowed its name, imitated its plan, and paid respect to its authority. Yet it is not in the name alone of Linnæus, that the members of this society place their confidence; still less do they bow to that name, or to any

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other, at the expense of their own right of private judgment. Their transactions are open to the pupils of every school, and the observations of every critic, that have any prospect of being useful to the world. The writer of each communication must, of course, be answerable for the particulars of his own performance, but the society is responsible for each being, on the whole, worthy to be communicated to the public. The possession of the very materials with which Linnæus worked, his own specimens and notes, enables us very often to correct mistakes, even of that great man, many of which would be unaccountable without the means of thus tracing each to its source. At the same time, the acquisition of materials to which he never had access, tends to improve and augment the history of what he had left imperfect. His language, his definitions and characters, were, for some time, held so sacred, that they were implicitly copied, even though manifestly inapplicable, in some points, to the objects to which they were referred. Synonyms were transcribed from his works by Rose, Hudson, Curtis, and even Gærtner (we assert it on the positive proof of errors of the press, copied in the transcribing), without reference to the original books, to see whether such synonyms, or their accompanying plates, agreed with the plant under consideration. The example of Dr Solander first led the writer of this to avoid such a negligent and unfaithful mode of proceeding; yet he has ever considered as sacred the very words of Linnæus, where they require no correction. They are become a kind of public property, the current coin of the botanical realm, which ought not, with impunity, to be falsified or adulterated. To them we hope to be pardoned if we apply the words of the poet,

The solid bullion of one sterling line,
Drawn to French wire, would through whole pages shine.

Of this it is needless to quote examples. We must be every day more and more sensible of the value of the Linnæan style, in proportion as the number of those who can attain it is evidently so very small. By the light of our master alone can the science, which he so greatly advanced and refined, be preserved from barbarism, while long and tedious, loose and feeble, ill-contrasted and barbarously-worded definitions, press upon it from various quarters. New terms are invented to express old ideas; names and characters are changed for the worse, to conceal the want of new discoveries; and students are often deterred from adopting real improvements, because they know not which guide to prefer.

"From the combined effects of the various causes which we have endeavoured to trace, the study of botany in England has, for a long period, been almost entirely practical. To determine the particular species intended, in every case, by Linnæus; to distinguish and to describe new ones; to improve scientific characters, and to correct synonyms; these have been the objects of our writers; and hence many publications of great utility, especially a number of critical and descriptive essays, in the Transactions of the Linnæan Society, not unworthy of the school which gave them birth, have enriched the general stock of knowledge. These are the sound fruits of skill and investigation, the solid advantages of real information, applied to practical use. They are independent of theoretical speculation, and will stand unshaken, amidst any possible changes of system. On such principles the *Flora Britannica* has been attempted, and continued as far as the present unsettled state of some of the latter orders, of the last class,

Practical study of botany in England.

¹ It may not, perhaps, be generally known, that Sir James Smith himself was the purchaser. Since his death it has become the property of the Linnæan Society of London, along with all his private collections and library.

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will allow.¹ Such impediments, which depend on the difficulties of systematic discrimination, among the Lichens especially, it is hoped will soon be removed. Meanwhile the *English Botany* of the same writer, illustrated by Mr Sowerby's expressive and scientific figures, has finished its course, and formed so nearly complete a body of local botany, as, we believe, no other country has produced. In this the liberal contributions of numerous skilful observers, from the Alpine heights of Scotland to the shores and circumambient ocean of the south, are preserved and recorded; evincing a degree of general inquiry and acuteness, which hardly any nation can rival. The memory of several benefactors to the science, otherwise in danger of passing away, is embalmed in this national work, which serves at once as their botanical testament, and the monument of their fame. Some of our botanists of the present day have thrown great light on several of the most obscure departments of the science; witness Mr Sowerby's work on *English Fungi*; the labours of the learned Bishop of Carlisle on *Carices*, and, in conjunction with Mr Woodward, on *Fuci*; of Mr Dawson Turner on the latter tribe, and on the *Musci* of Ireland; but especially Mr Hooker's inimitable display of the British *Jungermanniæ*.² Nor shall the contributions of a Winch or an Abbot, a Withering, Knapp, Stackhouse, or Vellely, nor the more splendid labours of the indefatigable Lambert, be forgotten. Each, in one way or other, has enlarged the bounds of science, or rendered it easier of access. We cannot, in the compass of our present undertaking, pay the tribute due to every individual, our aim being a general picture of the whole. From what we have said, the zeal with which this lovely science has been cultivated in England, will sufficiently appear. Nor have public lectures or botanic gardens been neglected, in order to render the knowledge of botany as accessible as possible, and to diffuse a taste for its pursuit. The popularity of the study has, at least, kept pace with the means of instruction. The garden and green-house, the woods, fields, and even the concealed treasures of the waters, are now the resource of the young and the elegant, who, in the enjoyment of a new sense as it were, in the retirement of the country, imbibe health, as well as knowledge and taste, at the purest of all sources.

France.

"France alone now remains to be considered, in order to finish the historical picture which we have undertaken of the state of botanical science in Europe. To do justice to this part of our subject, we must turn our attention to times long since gone by, or we shall scarcely render intelligible the state of affairs at present.

Tournefort.

"The great Tournefort, by the force of his character, his general and particular information, the charms of his pen, and the celebrity which his name gave to his country, through the popularity of his botanical system, was so firmly established, in the ideas of the French, as the *Grand Monarque* of botany, that they would have as soon allowed the greatness of Louis XIV. to be questioned, as that of this distinguished philosopher. So beneficial was this partiality, in some respects, that it gave an unprecedented impulse and popularity to the science; so disadvantageous was it in others, that it placed a formidable barrier in the

way of all improvement. Vaillant, the able and worthy pupil of Tournefort, has never been forgiven for speaking, on some occasions, too freely of his master's defects. Hence his own merit has been kept in the back ground. The doctrine of the sexes of plants was discountenanced as long as possible, because it was proved by Vaillant, after having been rejected by Tournefort. Nevertheless, when the good seed of science is once sown, it can hardly be totally suffocated by the impediments of prejudice and ignorant partiality. Practical zeal sprung up by the side of speculative jealousy, and the tares withered, while the profitable plants flourished. Some botanists followed the steps of Tournefort to the Levant, exploring afresh those countries which he has for ever rendered classic ground. Others visited America, which they traversed in different directions. The indefatigable Plumier performed three separate voyages to the western world; and though his discoveries have, in a great measure, suffered shipwreck from tardy and imperfect patronage, as a great part of his collections did by the accidents of nature, yet something of value remains. His *Filices* are enough to insure his perpetual remembrance, and his *Nova Genera* are the basis of our knowledge of generic differences in West Indian plants. Most of all has been distinguished, among the French botanists who succeeded the times of Tournefort and Vaillant, the family of the Jussieus. One of these Jussieus investigated the prolific regions of Peru, and discovered some things which no succeeding traveller has gathered. Other branches of this family, besides being eminent in medical science and practice, have pursued the study of botany with no ordinary success, on the most philosophical principles. Of these the most eminent are the celebrated Bernard de Jussieu, the contemporary of the earlier days of Linnæus; and his nephew Antoine Laurent de Jussieu, the pride and the ruler of systematic botany at present in France. The views and the performances of these great men lead us to a new branch of our subject, which indeed we have had in our contemplation from the beginning of this essay,—the exposition of the principles of a natural scheme of botanical classification, as hinted, and imperfectly sketched, by Linnæus, and brought to the perfection of a regular system by the Jussieus.

"Previous to our entering on this detail, and the remarks to which it will give rise, we must conclude all that belongs to the former part of our undertaking, by giving some account of those botanists who have formed and maintained a Linnæan school in France. We must shelter ourselves under the broad banner of truth when we observe that these have, till very lately, been almost the only French botanists that have supplied us with any practical information; and their labours have been useful in proportion as they have commendably shaken off the prejudices of their predecessors. Of this last proposition Duhamel is a witness, though we may perhaps excite some surprise in classing him among Linnæan botanists. His preface to his *Traité des Arbres* sufficiently shows how fearful he was of being taken for such, and yet how he was held by vulgar prejudice alone, to the nomenclature, or rather the generical opinions of Tournefort. He tells

¹ The *English Flora* was published on the same plan, a short time before the death of the author. This contains none of the Cryptogamia except the Ferns, but a continuation is every day expected from Dr Hooker.

² Dr Hooker, now Professor at Glasgow, is better known throughout the world as the first muscologist of the present age. His *Musci Exotici* and *Muscologia Britannica* are excellent. In a knowledge of Ferns he is also unrivalled, upon which branch, along with Dr Greville, he has published the splendid *Icones Filicum*. But it is not Cryptogamia alone his pencil and pen have illustrated; he has published the *Exotic Flora*, at present continues the *Botanical Magazine*, and is engaged with a *Botanical Miscellany*, *Flora Borcali-Americana*, &c. all of which are accompanied with plates.—Among those who have contributed in this country to illustrate botany by plates, we ought not to omit to mention Mr Lindley, and also Dr Greville, whose delineations of Cryptogamic subjects, particularly of Fungi, must always render his *Scottish Cryptogamic Flora* a standard work. There are other botanists, likewise, who equally deserve notice, although they be not gifted with the use of the pencil: Mr David Don has contributed much to the page of botany, but who has not heard of Mr Robert Brown, "*Botanicorum facile princeps*?"

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us, while he adopts these, that his judgment went with Linnæus, whom he follows in all new discoveries. The plan of his book, confined to hardy trees and shrubs, justifies his use of an alphabetical arrangement, in preference to any system, unless he had thought sufficiently well of Tournefort's to prefer that. But he has prefixed to his work, as a practical method of discovering scientifically what it contained, no other than a sexual classification. His practical botany was so limited, being entirely subservient to his great objects of forest planting and vegetable physiology, that he had no attention to spare for the consideration of methodical systems. Accordingly, he tells us, that some such is necessary for the use of botanists, especially of those who explore the productions of foreign countries; but whether the method of Ray, Tournefort, Boerhaave, Van-Royen, Linnæus, or Bernard de Jussieu be adopted, is of no importance. Six years before Duhamel's work came out, Dalibard had published, in 1749, his *Floræ Parisiensis Prodromus*, according to the Linnæan system.

"It has always appeared to the writer of this, from the conversation and writings of French botanists, that the judgment of the learned Le Monnier, and the countenance of his patron the Duke d'Ayen, afterwards Marechal de Noailles, first established the reputation of Linnæus in France; not so much possibly for the sake of his system, as his discoveries, his commodious nomenclature, and his clear principles of discrimination. When Le Monnier botanized in Chili, in the company of the astronomers with whom he was associated, he soon found, like Dr Garden in South Carolina, that the classification of Tournefort was no key to the treasury of a new world. He however made his remarks and collections, and studied them subsequently under the auspices of a more comprehensive guide. The Marechal de Noailles, a great cultivator of exotic trees and shrubs, corresponded with the Swedish naturalist, and endeavoured to recommend him to the notice of the lovers of plants in France. Meantime Gerard and Gouan in the south, both introduced themselves to the illustrious Swede, and promulgated his principles and discoveries, though only the latter adopted his classification. Villars we have already noticed as the author of a Linnæan *Histoire des Plantes de Dauphiné*. He died lately, professor of botany at Strasburg, where he succeeded the very able and philosophical Hermann, one of the truest Linnæans, who had imbibed all the technical style of the Swedish school, as well as its accuracy of discrimination. We may now safely announce Hermann as the real author, in conjunction perhaps with Baron Born, of that ingenious but bitter satire the *monachologia*, in which the several *species* of monks are affectingly discriminated, and their manners detailed, like the animals in the Linnæan *Systema Naturæ*. This ludicrous performance has long since appeared in a not very exact English translation, and was rendered into French by the late M. Broussonet. As we are led again to name this amiable man, too soon lost to his country, after experiencing every vicissitude of revolutionary peril and alarm, we cannot help distinguishing him as one most zealous in the cultivation and diffusion of Linnæan learning, a taste for which he chiefly imbibed in England. He had no indulgence for those prejudices which cramped the talents of his countrymen, and prevented their deriving knowledge from any quarter where it was to be had. He recommended the younger Linnæus to their personal acquaintance and favour; which service he also rendered, a few years after, to the person who now commemorates his worth, and who will ever remember, with affection and regret, his many virtues, his agreeable converse, and his various and extensive acquirements.

"The intimacy which subsisted between this enthusiastic naturalist and the distinguished botanist l'Heritier, confirmed, if it did not originally implant, in the mind of the latter, that strong bias which he ever showed for the Linnæan principles of botany. According to these his numerous splendid works are composed. He moreover imbibed, if we mistake not, from the same source, a peculiar preference for uncoloured engravings of plants, instead of the coloured ones which had long been in use. It cannot be denied that the merit of these last is very various, and sometimes very small. They do, nevertheless, present to the mind a more ready idea of each species, than a simple engraving can do, nor is the latter less liable to incorrectness. When plates are taken from the delineations of such exquisite artists as l'Heritier employed, they have a good chance of excellence; but the engravings of Cavanilles, done after miserable drawings, though they deceive the eye by their neat finishing, are really less exact than many a rude outline. Coloured plates, if executed with the uniformity and scientific exactness of Mr Sowerby's, or the characteristic effect of Jacquin's, speak to the eye more readily than most engravings. The art of printing in colours, practised formerly in England with small success, was revived at Paris by Bulliard, and is carried to the highest perfection in the recent publications of Redouté and Ventenat, which leave hardly any thing to be wished for, with respect to beauty or exactness. Many of the works of l'Heritier have remained imperfect, in consequence of the political convulsions of his country and his own premature death. The learned and worthy Desfontaines, who travelled in Barbary, has been more fortunate in the completion of his labours. His elegant *Flora Atlantica*, in 2 vols. 4to, with finely engraved uncoloured plates, is classed and modelled on the plan of the Linnæan school. Such also is the plan of the works of that distinguished botanist Labillardière, who, besides his account of New Holland plants, has published five elegant *decades* of new species from Syria. That scientific horticulturist M. Thouin, likewise a most excellent botanist, though he has scarcely written on the subject, is a correct pupil of the Swedish school. His general spirit of liberal communication, and his personal attachment to the younger Linnæus, led him to enrich the herbarium of the latter with the choicest specimens of Commerson's great collection, destined otherwise to have remained in almost entire oblivion. A singular fate has attended the discoveries of most of the French voyagers, such as Commerson, Sonnerat, and Dombey, that, from one cause or other, they have scarcely seen the light. So also it has happened to those of Tournefort, Sarrazin, Plumier, and others, whose acquisitions have long slept in the Parisian museums. Happily there seems to have arisen of late a commendable desire to render them useful by publication, and thus many fine plants, known merely by the slight and unscientific appellations of Tournefort, and therefore never adopted by Linnæus, have recently been clearly defined, or elegantly delineated. The journeys of Olivier and Michaux towards the east have enriched the Paris gardens, and been the means of restoring several lost Tournefortian plants. We believe however that the English nurseries have proved the most fertile source of augmentation to the French collections, as appears by the pages of all the recent descriptive writers in France.

"We dare not presume to arrange the indefatigable and very original botanist Lamarck among the Linnæan botanists of his country, but we beg leave to mention him here, as one who has thought for himself, and whose works are the better for that reason. His severe and often petulant criticisms of the Swedish teacher, made him appear more hostile than he really was, to the principles of

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that great man. Being engaged in the botanical department of the *Encyclopédie Méthodique*, he was obliged to conform to an alphabetical arrangement; but he surely might have chosen the scientific generic names for that purpose, instead of barbarous or vernacular ones, which, to foreigners, would have made all the difference, between a commodious and an unintelligible disposition of his work. In the detail of his performance, he has great merit, both with respect to clearing up obscure species, or describing new ones; and he had the advantage of access, on many occasions, to Commerson's collection. Lamarck's *Flore Française* is arranged after a new analytical method of his own. This book however is valuable, independent of its system, as an assemblage of practical knowledge and observation. We have only to regret a wanton and inconvenient change of names, which too often occurs, and which is not always for the better; witness *Cheiranthus hortensis*, instead of the long established *incanus* of Linnæus; *Melampyrum violaceum*, which is not correct, for *nemorosum*, which is strictly so, and which preserves an analogy with the rest of the species.

"We shall now undertake the consideration of the principles that have been suggested, and the attempts that have been made, respecting a

NATURAL CLASSIFICATION OF PLANTS.

Sexual system.

"The sexual system of Linnæus lays no claim to the merit of being a natural arrangement. Its sole aim is to assist us in determining any described plant by analytical examination. The principles on which it is founded are the number, situation, proportion, or connection, of the stamens and pistils, or organs of impregnation. These principles are taken absolutely, with the sole exception of their not being permitted to divide the genera, that is, to place some species of a genus in one part of the system, and others in another, though such may differ in the number, situation, proportion, or connection of their stamens or pistils; those characters being possibly artificial, while the genera are supposed, or intended, according to a fundamental law independent of all systems, to be natural assemblages of species. We need not here explain the mode in which Linnæus has provided against any inconvenience in practice, resulting from such anomalies of nature herself.

"But though this popular system of Linnæus does not profess to be a natural method of classification it is in many points incidentally so, several of its classes or orders whose characters are founded in situation, proportion, or connection, being more or less perfectly natural assemblages; nor can it be denied that, on the whole, it usually brings together as many groups of natural genera, as occur in most systems that have been promulgated. This fact would be more evident, if the various editors of the system, those who have added new genera to the original ones of Linnæus, or, in general, those who have any way applied his method to practice, had properly understood it. They would then have perceived that its author had always natural affinities in view; his aim, however incompletely fulfilled, according to our advanced knowledge, having constantly been, to place genera together in natural affinity or progression, as far as their relationship could be discerned. At the same time he uses an analytical method, at the head of each class in his *Systema Vegetabilium*, in which the genera are disposed according to their technical characters. Murray, in compiling the fourteenth edition of that work, has been inadvertent respecting this essential part of its plan. Indeed it is probable that he was not competent to judge of the affinities of the new genera, introduced from the *Supplementum*, or from the communication of Jacquin, Thunberg, &c. Yet

surely he might have perceived the affinity of *Banksia* to *Protea*, rather than to *Ludwigia* or *Oldenlandia*; and indeed Linnæus himself ought to have discovered the relationship of the latter to *Hedyotis*, if he did not detect their identity, instead of inserting it between two such strict allies of each other as *Ludwigia* and *Ammannia*. To pursue these remarks would be endless. It is hardly necessary to indicate the natural classes or orders of the Linnæan system, such as the *Tetradynamia*, *Didynamia*, *Diadelphia*, *Syngenesia*; the *Triandria Digynia*, *Gynandria Diandria*, &c. Except the first-mentioned class, which, if *Cleome* be removed, is strictly natural and entire, the others are liable to much criticism. We are almost disposed to allow, what we know not that any one has yet observed, that the system in question is the more faulty in theory, for these classes being so natural as they are. Each order of the *Didynamia* presents itself as a natural order, though the character of that class, derived from the proportion of the stamens, serves to exclude several genera of each order, and to send them far back into the second class. If all ideas of natural affinity be discarded from our minds, there is no harm whatever in this; but if the *Didynamia* claims any credit, as a class founded in nature, the above anomaly is a defect. So, still more, under the same point of view, is the *Diadelphia*, or at least its principal order *Decandria*, liable to exception. This order consists entirely of the very natural family of *Papilionaceæ*. They are characterized as having the ten stamens in two sets. Now it happens that there are many papilionaceous genera, indeed a great number of such have been discovered since Linnæus wrote, whose ten stamens are all perfectly distinct. These therefore are necessarily referred to the class *Decandria*, and they come not altogether amiss there, because they meet in that class some concomitant genera, which though, like them, leguminous, are less exactly, or scarcely at all, papilionaceous. But the greatest complaint lies against some genera of the *Diadelphia Decandria*, for having the stamens all really combined into one set, so as in truth to answer to the technical character of the preceding class *Monadelphia*. There is mostly indeed some indication of a disunion upward, where they, more or less perfectly, form two sets; and some of them are so nearly diadelphous, that their complete union at the bottom may easily be overlooked; others, however, have only a fissure along the upper side of their common tube, without any traces of a separate stamen or stamens. The papilionaceous character of the *corolla* therefore, in such cases, is made to overrule that of the particular mode of union among the stamens, and is in itself so clear, as seldom to be attended with any difficulty; but the incorrectness of principle in the system, in the point before us, as being neither professedly natural, nor exactly artificial, cannot be concealed. Part of the objections, to which the sexual system was originally liable, have been obviated. We mean what concerns the last class but one, *Polygamia*. Dr Forster observed, in his voyage round the world, that this class was subject to great exception, on account of the trees of tropical climates, so many of which are constantly or occasionally polygamous; that is, each individual frequently bears some imperfect flowers, male or female, along with its perfect or united ones. Such a circumstance reduces any genus to the class *Polygamia*; and on this principle Mr Hudson, thinking perhaps that he made a great improvement, removed our *Ilex Aquifolium*, or Holly, thither, though *Ilex* is well placed by Linnæus in the fourth class. The author of the present essay has ventured to propose a scheme, which is adopted in his *Flora Britannica*, for getting clear of this difficulty. He considers as polygamous such genera only as, besides having that charac-

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ter in their organs of impregnation, have a difference of structure in the other parts of their two kinds of flowers. Thus *Atriplex* has, in its perfect flowers, a regular spreading calyx, in five equal segments; in the attendant female ones a compressed one, of two leaves, subsequently much enlarged.

"The genera thus circumstanced are so very few, as far as we have discovered, that possibly the class might, but for the uniformity of the system, be abolished. We cannot indeed tell what future discoveries may be made; and its character, on the above foundation, is sufficiently clear and permanent; for flowers of an essentially different configuration can hardly vary into each other. The orders of the last class of the Linnæan system, *Cryptogamia*, are natural, and preserved, all nearly the same, by every systematic projector. The original appendix to this system, the *Palmeæ*, would be a great blemish therein, as an artificial arrangement; for such an arrangement ought to be so formed as to admit every thing, on some principle or other. But this stumbling-block is now removed. The palm tribe were placed thus by themselves, merely till their fructification should be sufficiently known. Now they are found to agree well with some of the established classes and orders, where they meet with several of their natural allies.

"Whatever advantages might accrue to the practical study of botany, from the convenience and facility of his artificial system, Linnæus was from the beginning intent on the discovery of a more philosophical arrangement of plants, or, in other words, the classification of nature. This appears from the 77th aphorism of the very first edition of his *Fundamenta Botanica*, published in 1736, where he mentions his design of attempting to trace out fragments of a natural method. In the corresponding section of his *Philosophia Botanica*, he, fifteen years afterwards, performed his promise; and the same *Fragmenta*, as he modestly called them, were subjoined to the sixth edition of his *Genera Plantarum*, the last that ever came from his own hands. The interleaved copies of these works, with his manuscript notes, evince how assiduously and constantly he laboured at this subject, as long as he lived. He was accustomed to deliver a particular course of lectures upon it, from time to time, to a small and select number of pupils, who were for this purpose domesticated under his roof. What this great botanist has himself given to the world, on the subject under consideration, is indeed nothing more than a skeleton of a system, consisting of mere names or titles of natural orders, amounting in his *Philosophia* to sixty-seven, besides an appendix of doubtful genera; and that number is, in the *Genera Plantarum*, reduced to fifty-eight.

"Under the title of each order, the genera which compose it are ranged according to the author's ideas of their relationship to each other, as appears by some of his manuscript corrections; and some of the orders are subdivided into sections, or parcels of genera more akin to each other than to the rest. He ingeniously avowed, at all times, his inability to define his orders by characters. He conceived that they were more or less connected with each other by several points of affinity, so as to form a map rather than a series. The experienced botanist, who peruses the above-mentioned *Fragmenta*, will in most

cases readily imbibe the ideas of their author, as to the respective affinities of the genera. In some few instances, as the *Dumosæ*, where he avows his own doubts, and the *Holeraceæ*, where he is unusually paradoxical, it is more difficult to trace the chain of his ideas. Such, however, was all the assistance he thought himself competent to afford. His distinguished pupils, Fabricius and Giseke, fortunately took notes of his lectures on natural orders; and by the care of the latter, to whom Fabricius communicated what he had likewise preserved, their joint acquisitions have been given to the public, in an octavo volume, at Hamburg, in 1792. Nor was this done without the permission of their venerable teacher, who told Giseke by word of mouth, when they took leave of each other, that 'as he loved him, he had laboured with pleasure in his service;' adding, that 'Giseke was at liberty to publish, whenever he pleased, any thing that he had retained from his own instructions.'

"Linnæus, according to a conversation with Giseke, recorded in the preface of the volume edited by the latter, declined to the last any attempt to define in words the characters of his orders. His reason for this appears in his *Classes Plantarum*, where he justly remarks, that no certain principles, or key, for any such definition can be proposed, till all the orders, and consequently all the plants, in the world are known. He has, however, so far expressed his opinion, in the work last quoted, as to point out the situation of the seed itself, with respect to other parts, and the situation and direction of its vegetating point, or *corculum*, as most likely to lead to a scheme of natural classification. Hence the system of Cæsalpinus stood very high in his estimation. He also, in the conversation above mentioned, divides his own orders into three sections, or classes, *Monocotyledones*, comprising the first ten orders, with the 15th; *Dicotyledones* (with two or more cotyledons), the 11th to the 54th order inclusive, except the 15th; and *Acotyledones*, order 55th to 58th, with a hint that the last, or *Fungi*, ought perhaps to be altogether excluded. This distribution of plants, by the number or the absence of the cotyledons, or lobes of the seed, is the great hinge of all the professedly natural modes of arrangement that have been attempted."

"Linnæus did not consider it as absolute, for he told Giseke that he knowingly admitted into his eleventh order some plants that are monocotyledonous, with others that are dicotyledonous. The reason of this was the only secret he kept from his pupil; nor could the latter ever dive into it, though he afterwards endeavoured to learn it from the younger Linnæus, who knew nothing, neither did he, as Giseke says, much care about the matter."¹

The want of any avowed principle of distinction precludes almost all criticism of these orders of Linnæus as a natural system. They cannot be applied to practice, and might in the present day be passed over in silence. As, however, a very few, and amongst others the late Sir J. E. Smith, considered them as even of more importance than those of Jussieu, an opinion in which we cannot coincide, we shall trace very shortly their names, but omit entirely the notes that usually accompany them, as unphilosophical, and tending but little to benefit the reader.

¹ "Nymphaea appears to be the great secret, which the worthy professor told his pupil, that he, or some other person, might chance to find out in ten, twenty, or fifty years, and would then perceive that Linnæus himself had been aware of it. Accordingly Gærtner and Jussieu have made the same discovery, or rather, fallen into the same mistake, describing *Nymphaea* as monocotyledonous, and *Cyamus*, Sm. *Exot. Bot.* v. i. 59 (their *Nelumbo* or *Nelumbium*), as in some measure dicotyledonous. The excellent De Candolle, in the *Bulletin des Sciences*, No. lvii. published in 1802, has first rightly considered both as dicotyledonous, and akin to the *Papaveraceæ* of Jussieu, the Linnæan *Rhæadææ*."

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Exposition of the Linnæan natural orders.

I.—*Monocotyledones.*

1. *Palmae*. 2. *Piperitæ*, the flowers of which are crowded into a close spike, including *Arum*. 3. *Calamariæ*, or grass-like plants, not true grasses, as *Carex*, *Typha*, &c. 4. *Gramina*, or the true grasses. 5. *Tripetaloideæ*, in which there were three petals (Linn.), as *Juncus* and *Alisma*. 6. *Ensatae*, where the leaves are ensiform, and the corolla (Linn.) monopetalous. 7. *Orchideæ*, with fleshy roots, and the flowers either furnished with a spur or of a singular construction; the filaments and style are united, and the ovarium inferior. 8. *Scitamineæ*, with herbaceous stems, very broad leaves, a triangular ovarium beneath a liliaceous corolla. 9. *Spathaceæ* are those lilies which have the flowers issuing from a large spathe. 10. *Coronariæ*, or lilies without a spathe, but with a corolla of six petals. 11. *Sarmentaceæ*, with weak stems and liliaceous flowers.

II.—*Dicotyledones.*

12. *Holeraceæ*, "plants tender or brittle in the mouth, and easy of digestion;" the flowers of no beauty. 13. *Succulentæ*, with very thick fleshy leaves. 14. *Gruinales*, having a pentapetalous corolla, several pistils, and a long pointed capsule, as *Geranium*. 15. *Inundatæ*, which grow in or under water, with flowers of no beauty. 16. *Calycifloræ*: here there is only a calyx, on which the stamina are inserted; but the genera put into this were afterwards referred elsewhere by Linnæus. 17. *Calycanthemæ*, where the calyx is seated on the germen or ovarium, and the flowers are beautiful. 18. *Bicornes*, having the anthers provided with two long straight points or horns, as *Erica*, and several others having no real affinity. 19. *Hesperides*, with evergreen leaves, fragrant flowers, and numerous stamens. 20. *Rotaceæ*, having a rotate corolla. 21. *Preciæ*, with handsome early spring flowers, as the primrose. 22. *Caryophylleæ*, or those with a caryophyllaceous corolla. 24. *Trihilatæ*, having a style with three stigmas, and winged or inflated capsules, as *Melia*, *Malpighia*, and *Acer*: 25. *Corydalis*, flowers with a spur, or of a singular form, as in *Epimedium* and *Pinguicula*. 25. *Putamineæ*, bearing fruit in a hard shell, as *Capparis*, and others not allied to each other. 26. *Multisiliquæ*, with a fruit of many siliquæ, as *Trollius*. 27. *Rheadæ*, with a caducous calyx, and a capsule or siliqua. 28. *Luridæ*, corresponding to the *Solanaceæ* of Jussieu. 29. *Campanaceæ*, with bell-shaped flowers, but otherwise an unnatural assemblage. 30. *Contortæ*, with a twisted corolla, as *Nerium* and *Vinca*. 31. *Vepreculæ*, having a monophyllous calyx, coloured like a corolla. 32. *Papilionaceæ*, with papilionaceous flowers. 33. *Lomentaceæ*, with a legume or lomentum, but not a papilionaceous flower. 34. *Cucurbitaceæ*, as *Cucumis* and *Pasiflora*. 35. *Senticosæ*, comprehending many of the *Rosaceæ*. 36. *Pomaceæ*, as *Amygdalus* and *Pyrus*. 37. *Columniferæ*, in which the stamens, as in *Malva*, unite and form a long tube. 38. *Tricocceæ*, with a trilocular capsule, as *Euphorbia*. 39. *Siliquosæ*, corresponding to *Tetradynamia* in the artificial system. 40. *Personatæ*, the same as *Didynamia angiospermia*. 41. *Asperifoliæ*, having "four naked seeds" (Linn.), a monopetalous corolla, five stamens, one style, and rough leaves. 42. *Verticillatæ*, those with labiate or ringent flowers, including some of *Diandria*, and all *Didynamia gymnospermia*. 43. *Dumosæ*, shrubby plants, with a stem furnished with a soft pith: flowers small, the petals of four or five segments, as *Sambucus*, *Rhamnus*, &c. 44. *Separiæ*, shrubs, usually with a tubular corolla, and very few stamens, as *Ligustrum*. 45. *Umbellatæ*, bearing an umbel of flowers, a pentapetalous corolla, five stamens, two styles, and "two naked seeds." 46. *Hederaceæ*, with a quinquefid corolla, five or ten stamens, a baccate fruit, and flowers in a corymb; *Hedera* and *Vitis* were here associated.

47. *Stellatæ*, with a quadrifid corolla, four stamens, and two "naked seeds." 48. *Aggregatæ*, resembling the compound flowers, but with the anthers free. 49. *Compositæ*, or the compound flowers. 50. *Amentaceæ*, with the fruit in a catkin. 51. *Coniferæ*, bearing a strobilus or cone. 52. *Coadunatæ*, which have several berries or fruits united into one, as *Annona*. 53. *Scabridæ*, having rough leaves, and flowers of no attraction, as *Urtica*, *Ficus*, &c. 54. *Miscellaneæ*, or those not referable to the preceding.

III.—*Acotyledones.*55. *Filices*. 56. *Musci*. 57. *Algæ*. 58. *Fungi*.

It will readily appear that many of these are very artificial, and some of the conjunctions quite improper; but, upon the whole, they exhibit a great resemblance in their external appearance, which Linnæus himself could not define in words.

We shall now advert to the French school of Botany; French school. and "here the learned and truly estimable Bernard de Jussieu, the contemporary of Linnæus in the earlier part of his career, first claims our notice. This great practical botanist, too diffident of his own knowledge, extensive as it was, to be over-anxious to stand forth as a teacher, did not promulgate any scheme of natural arrangement till the year 1759, when the royal botanic garden at Trianon was submitted to his direction. His system was published by his nephew in 1789, at the head of his own work, of which it makes the basis. It appears in the form of a simple list of genera, under the name of each order, without any definition, just like the *Fragmenta* of Linnæus, at the end of his *Genera Plantarum*.

"In 1763 a very active and zealous systematic, M. Adanson, made himself known to the world, by the publication of his *Familles des Plantes*. In this learned and ingenious, though whimsical and pedantic work, the great task of defining natural orders by technical characters is first attempted. His affected orthography and arbitrary nomenclature render it scarcely possible, without disgust, to trace his ideas; which, however, when developed, prove less original than they at first appear. His work is written avowedly to supersede the labours of Linnæus, against whom, after courting his correspondence, he took some personal displeasure; and yet many of his leading characters are borrowed from the sexual system. The discriminative marks of his fifty-eight families are taken from the following sources: leaves, sex of the flowers, situation of the flowers with respect to the germen, form and situation of the corolla, stamens, germens, and seeds. Every family is divided into several sections, under each of which the genera are, in like manner, synoptically arranged, and discriminated by their leaves, inflorescence, calyx, corolla, stamens, pistil, fruit, and seeds. In the detail of his system, Adanson labours to overset the principle, so much insisted on by Linnæus and his school, and to which the great names of Conrad Gesner, and Cæsalpinus, are chiefly indebted for their botanical fame, that the genera of plants are to be characterized by the parts of fructification alone. The experienced botanist knows that this is often but a dispute of words; Linnæus having, in arranging the unbelliferous plants, resorted to the inflorescence, under the denomination of a receptacle; see his 45th natural order. But it appears to us that the characters deduced from thence are in themselves faulty, being often uncertain, and not seldom unnatural; and that the plants in question may be better discriminated by their flowers and seeds. Adanson however prefers the inflorescence, even in the *Verticillatæ* of Linnæus; for no reason, that we can discover, but because Linnæus has so much better defined the genera of those plants by the *calyx* and *corol-*

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Bernard de Jussieu.

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la. It were a needless and ungrateful task to carp at the mistakes of this or any writer on natural classification, with regard to the places allotted for difficult genera, because the human intellect must fault in unravelling the intricate mysteries of Nature. But surely, when *Plantago* is placed with *Buddleia* in one section of the *Jasminææ*, and *Diapensia* with *Callicarpa* in another; when the most natural genus of *Lavandula* is divided and widely separated; when *Cassythia* is ranged with *Statice*, *Eriocaulon*, and the *Proteaceæ*, in one place; *Geoffræa* with *Melia*, *Rhus*, *Sapindus*, and *Ruta*, in another; we may be allowed to wonder, and to doubt whether we are contemplating a natural or an artificial system. It does not appear that Adanson made many proselytes. He haunted the botanical societies of Paris in our time, without associating with any; nor was his extensive knowledge turned to much practical account. Linnæus has made but one slight remark, that we can find, in his own copy of the *Familles des Plantes*, nor could he study deeply what was undoubtedly very difficult for him to read. He certainly never noticed Adanson's attacks, unless the satirical sketch of the *Botanophili*, at the end of his *Regnum Vegetabile*, (see the beginning of *Syst. Veg.* ed. 14), be partly aimed at this author. To apply the whole of it to him would be unjust, though much is very characteristic.

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Sciences.

"The study of Botany had never been entirely neglected in France since the days of Tournefort; because one department in the Academy of Sciences was allotted to that and other branches of natural history; and the seats in the academy being pensioned places under government, there was something to be got by an apparent attention to such pursuits. Buffon and his pupils engrossed zoology. Botany was allowed to exist, so far as not to interfere with his honours; but nothing of foreign origin, and above all, nothing Linnæan, dared to lift up its head. Something of true science, and practical knowledge, did nevertheless imperceptibly work its way. Le Monnier, and the Marechal de Noailles, corresponded, as we have already said, with Linnæus, and acquired plants from England, of which they dared to speak, and to write, by his names. A most able and scientific botanist and cultivator, Thouin, was established in the Jardin du Roi, who studied the Linnæan system, and even ventured, though secretly, to communicate new plants to the younger Linnæus when at Paris. Cels, an excellent horticulturist, was unshackled by academic trammels. L'Heritier, Broussonet, and others, came forward. An original letter of Rousseau, the idol of the day, in which he paid the most flattering homage to botany and to Linnæus, was published in the *Journal de Paris*, and had a wonderful effect on the public mind, and on the conversation of literary circles. In short, a Linnæan party had been, for some time, gaining ground; and every thing was done by party at Paris. The old French school was roused from its slumbers. Of the family of the Jussieus, one individual remained, who, though he venerated the names and the pursuits of his uncles, had never devoted himself to their studies any further than to sit in their professorial chair. He possessed, however, an inherent taste for botany; he had leisure, opulence, and eminent talents; and though his religious principles, and his rather strict devotional habits, might interfere, which they still do, with his credit in certain philosophical circles, and his predilection for animal magnetism might exclude him from the Royal Society of London, yet he has risen above all such obstacles, to the summit of botanical fame and authority in his own country; and his name stands conspicuous, as the leading teacher of a na-

tural classification of plants. The most indefatigable study for about five years, and the constant assistance and encouragement of numerous pupils and correspondents, enabled Professor Antoine Laurent de Jussieu to publish, in 1789, his *Genera Plantarum secundum ordines naturales disposita*. This octavo volume was received by acclamation throughout Europe, and hailed as the most learned botanical work that had appeared since the *Species Plantarum* of Linnæus."

"The whole preface of Jussieu is a concise and learned review of the physiology and distinctions of plants, more particularly explaining the progress of the author's ideas and principles of botanical classification. The main end of the whole book, besides defining the characters of all known genera, is to dispose them in a natural series, in various classes and orders, whose technical distinctions are throughout attempted to be fixed and contrasted."¹

The first in England who wrote a systematic work according to the natural method of Jussieu, was Mr Brown, the most able botanist of this or any former age; and no one has done so much, in any country, to throw light on its intricacies. Salisbury, Hooker, Don, and Lindley, have respectively contributed their share; but we regret to say, that hitherto, in Britain, from the simplicity of the Linnæan system for enabling one to obtain the name of a plant, and from the want of good elementary works in our language to guide the student, the natural classification, except among a few of the principal botanists, has been very little attended to. Another great desideratum has been a *Species Plantarum*, or work containing all the known species, arranged in this way: but this is at present attempted by Professor De Candolle of Geneva, and when his *Prodromus Systematis Regni Vegetabilis* is completed, we do not hesitate to state that, notwithstanding a multitude of errors, it will prove to be one of the most valuable works ever presented to the public, and will tend more to establish the method than all the books previously written on the subject.

"The advantages of such a system," says Mr Lindley, "in applying botany to useful purposes, are immense, especially to medical men, with whose profession the science has always been identified. A knowledge of the properties of one plant is a guide to the practitioner, which enables him to substitute some other with confidence which is naturally allied to it; and physicians on foreign stations may direct their inquiries, not empirically, but upon fixed principles, into the qualities of the medicinal plants which nature has provided in every region for the alleviation of the maladies peculiar to it. To horticulturists it is not less important: the propagation or cultivation of one plant is usually applicable to all its kindred; the habits of one species in an order will often be those of the rest; many a gardener might have escaped the pain of a poisoned limb, had he been acquainted with the laws of affinity; and finally, the phenomena of grafting, that curious operation, which is one of the grand features of distinction between the animal and vegetable kingdoms, and the success of which is wholly controlled by ties of blood, can only be understood by the student of the natural system."

The natural method having in view not the mere naming of plants, which can of itself be interesting to only a limited number of individuals, but the classifying them according to the groups which nature herself forms, or rather, as nature forms only species, according to the resemblance that one tribe of vegetables bears to another, we must, consequently, conform as much as possible to

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¹ Sir J. E. Smith in *Encycl. Brit.* sixth ed. Supp. vol. ii. p. 415 and 416.

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her laws; and to know these we must first obtain a precise idea of the organization of plants, studying minutely all their parts, and the functions of each. This we have already attempted to elucidate under the head of Glossology. We now come to examine into the relative importance of these organs, in order that we may derive from them a classification according to nature.

When different seeds taken from the same plant are made to germinate, we have individuals not entirely agreeing in the shape of the leaves, or the height of the stem; from which we may infer that characters derived from these are of the least importance; and consequently, when we form species, we must use such with great caution. But when we rise a step higher, and group species into genera, we find so great a variety in both the stem and leaves, that we are forced to look for characters elsewhere, and thus resort to the different parts of the flower; and all genera are therefore founded on a consideration of these. When, however, we come to examine a genus by itself, we shall find that perhaps none of these parts are sufficiently constant, some species differing from others in the number or shape of the sepals, or petals, or stamens, or pistilla, so that we are obliged to call into action not any particular one, but a combination of the whole. While doing this, it cannot escape our notice that the more external portions, as the calyx, exhibiting more of the foliaceous origin, are less constant than the petals; and these again less so than the stamens; but the stamens and pistils having least of the structure of the original leaf, are the most uniform; and hence Linnæus, influenced principally however by these being the true sexual organs, adopted the stamina and pistils as the basis of his system. Now we have already said that, in many natural genera, plants differ from one another only specifically, although there happen to be a difference in the number of parts of the reproductive organs. Number, then, not being at all times sufficient to constitute a genus, can still less be relied on for a higher division. The structure must thus be considered; and this we not only find common to the species of a genus, but even often to different genera so allied in aspect that at first we might consider them all as one great genus; and such a great genus being in fact an order, we are led, while defining it, to place considerable dependence on the structure of the anthers, but more especially on the fruit, the ultimate metamorphosis of the primary leaf. But on comparing together two or more orders otherwise very closely allied, we often perceive very different structures of the fruit; so that, in search of something more fixed, we are compelled to dip still deeper into the economy of the plant, and examine the seed. Here, indeed, we find a great diversity in the external form; but on scrutinizing the interior, particularly the embryo, or the very rudiment of the plant, we find only *two* modifications; and each of these, after having opened different seeds, we perceive to be constant to a very great class of plants united together, whether by the structure of the fruit, the number of stamens, or by the flower, or by the anatomy of the stems, or by the leaves. These modifications of the embryo, resting on there being one or two cotyledons, must thus form the groundwork of a natural method: it was already foreseen by Linnæus, but was demonstrated by Jussieu. We only here allude to those plants in which a seed and embryo exists; for the very principle we have laid down implies its existence. A primary division, then, pointed out by nature, is therefore obviously into those with flowers and those that have none, or into those which have seeds and an embryo, and such as have neither true seeds nor an embryo.

Primary divisions.

First, then, we have a division into Exembryonate and Embryonate vegetables; and, secondly, the Embryonate

divides into those with one and those with two cotyledons, which was no sooner fixed than many corresponding differences of structure became perceptible. Thus *Monocotyledones* show a radicle that projects the root through a covering. The divisions of the flower are ternary; the leaves are curvinerved, primarily alternate or spiral, but indicating a disposition to become opposite at the summit of the plant; the stem is cylindrical, and increasing in diameter from within by an expansion of the vascular fibre. The *Dicotyledones*, on the contrary, have opposite cotyledons; the radicle of the embryo becomes a root by mere development; the division of the flower is usually quinary; the leaves are angulinnerved, and primarily opposite or verticillate, with a tendency to become alternate towards the inflorescence; the stem is conical, with a bark, and both increasing by concentric layers, the stem from without, the bark from within.

Having thus attained primary divisions with important Second and constant characters, we are next to proceed to subdivision. We divide these into orders; but in doing this we must observe, that though it be quite possible to group genera into orders, and to place these orders in one of the great divisions above given, it is almost impracticable to place them satisfactorily one after the other so as to constitute a book. Each order is not allied merely to the one that precedes and that which follows it, but approaches more or less to several others. In arranging them, then, in a linear series, all that we can attempt is to place those next each other that have common characters of most value or of greatest number; and as the value and number of these are added to or diminished by the discovery of new plants and modern analyses, we must expect daily changes to take place. In this consists the difficulty of the natural method, when compared with a purely artificial one; but these difficulties are from time to time smoothed down, so that ultimately it will be viewed as the only useful one, while the artificial system will be entirely neglected, except by those whose desires extend no farther than to make out the name of a vegetable.

Jussieu considered the whole floral envelopes of the *Monocotyledones* as a calyx, whether coloured or green; and observing that a portion of the *Dicotyledones* were also destitute of a corolla, he laid hold of this to divide them into two parts, as had been already done by Tournefort: at the same time he separated those with a corolla into one and many-petaled. These sections, however, being artificial, cannot be entirely depended on in practice, many species belonging to a polypetalous order having the corolla abortive; while again, as in the *Pentapetaloidæ* of Ray, several of those also with a polypetalous corolla have the unguis or claws united, so that it is in reality a monopetalous one, although arranged with the other. Linnæus had already introduced the insertion of the stamens to distinguish his class *Icosandria* from *Polyandria*; and this bringing together plants tolerably nearly allied in other respects, Jussieu extended the idea, and having observed that stamens not hypogynous were either perigynous or epigynous, he made use of these three characters to subdivide both the *Monocotyledones* and each of the sections of the *Dicotyledonous* plants. Only one of these he found necessary further to divide, in order to separate *Syngenesia* of Linnæus from those approximated to them in several other characters, but of a different habit or appearance, and had here recourse to the union or separation of the anthers. These ultimate subdivisions he termed classes, and to the end of them he appended one consisting of such *Dicotyledones* as had the flowers unisexual, and were therefore principally contained in the 21st, 22d, and 23d classes of Linnæus. We have already seen, in treating of the parts of a flower, that the stamens and corolla have

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always the same insertion, and that when a corolla is gamopetalous, or, in common language, monopetalous, the cause that unites the petals often also makes part of the filaments adhere to it. Among the monopetalous plants, then, to prevent confusion, Jussieu, instead of saying that the stamens were hypogynous or perigynous, speaks of the insertion of the corolla; and, with these remarks, we may now present the fifteen classes of Jussieu.

I.—Cotyledons none.

Cl. 1. *Acotyledones*.

II.—Monocotyledones.

2. *Monohypogynæ*, stamens hypogynous.
3. *Monoperigynæ*, stamens perigynous.
4. *Monoepigynæ*, stamens epigynous.

III.—Dicotyledones.

§ 1. Apetalæ.

5. *Epistamineæ*, stamens epigynous.
6. *Peristamineæ*, stamens perigynous.
7. *Hypostamineæ*, stamens hypogynous.

§ 2. Monopetalæ.

8. *Hypocorollæ*, corolla hypogynous.
9. *Pericorollæ*, corolla perigynous.
10. *Epicorollæ synantheræ*, corolla epigynous, anthers united.
11. *Epicorollæ corisantheræ*, corolla epigynous, anthers free.

§ 3. Polypetalæ.

12. *Epipetalæ*, stamens epigynous.
13. *Peripetalæ*, stamens perigynous.
14. *Hypopetalæ*, stamens hypogynous.

§ 4. Diclinae.

15. *Diclinae*, flowers unisexual, or without a perianth.

Such was the groundwork of the system which, though in some things artificial, was instantly perceived to bear the palm from all that preceded it; and this, without any alteration, is still adhered to in France by many of the most eminent botanists. Jussieu originally prefixed no names to his classes, and the want of this was much objected to. Those which we have given have been lately proposed by Antoine L. de Jussieu in the *Dictionnaire des Sciences Naturelles*; and, although not entirely according to the principles of the Greek language, may be adopted as extremely useful, each being so framed as to suggest the structure of the class. Thus the commencement *Mono* indicates the Monocotyledones. *Epistamina*, &c. having no allusion to a corolla, suggests its absence. *Hypocorollæ*, and the others, allude to the corolla being of one piece, and not of distinct petals, which last is pointed out by names *Epipetalæ*, &c. The other parts of the names, epi, peri, and hypo, need no explanation.

While engaged in the study of plants alone, it is obviously of little consequence whether we begin, as Jussieu did, by the Acotyledones, or by the Dicotyledones; but if we view botany as a science that treats of only one of the great kingdoms of nature, and wish to introduce it into a *Systema Naturæ*, we must bring those portions of each most closely together which are most nearly linked. So that if we commence by Zoology, we must first describe the Mammalia, and end by those of a simpler structure, and then take up the most allied of the Acotyledones, and follow the steps of Jussieu. But if we describe vegetables

in the first place, we must begin with the Dicotyledones, and finish with the Acotyledones. When, however, a *Systema Vegetabilium* is contemplated without reference to animals, it may perhaps smooth the way to the student if it commences by those more obvious, and, though of more complex formation, yet more simple to be comprehended. On this account De Candolle has reversed the arrangement of Jussieu.

We have said that in some respects the system of Jussieu is artificial, and therefore his orders need not necessarily follow each other precisely as he has left them. De Candolle accordingly divides the Dicotyledones into *Thalamifloræ*, or those whose petals are distinct and hypogynous; *Calycifloræ*, having the petals either distinct or united, but always inserted on the calyx; *Corollifloræ*, with the petals united, and hypogynous, and bearing the stamens; and *Monochlamydeæ*, with a simple perianth or perigonium. Moreover, he derives his characters for all these united, not from the cotyledons, but from the structure of the stem, and terms them Exogenæ; and in a similar way he calls Monocotyledones by the name of Endogenæ, with this alteration, that he supposes the ferns and allied plants, which in another part we have termed Ductulosæ, to have the same structure of a stem as the Monocotyledones, and therefore divides the Endogenæ into *Phanerogamæ* and *Cryptogamæ*. The other Acotyledones, named by him *Cellulares*, from their entire homogeneity of cellular tissue, conclude the system. Although he has given us an arranged catalogue of the orders in his *Theorie Elementaire*,¹ which, however, he has considerably altered in his *Prodromus*, now publishing, yet he has scarcely exhibited any subdivisions of his principal groups. It may be, however, useful to present the following sketch of his, contrasted as much as possible with that of Jussieu.

A. Exogenæ (<i>De Candolle</i>). Dicotyledones (<i>Jussieu</i>).	
I. Thalamifloræ.....	1. Hypopetalæ.
II. Calycifloræ.....	2. Peripetalæ.
	3. Epipetalæ.
	4. Epicorollæ corisantheræ.
	5. Epicorollæ synantheræ.
III. Corollifloræ.....	6. Pericorollæ.
	7. Hypocorollæ.
IV. Monochlamydeæ.....	8. Hypostamineæ.
	9. Peristamineæ.
	10. Epistamineæ.
	11. Diclinae.
B. Endogenæ.	
V. Phanerogamæ.....	12. Monoepigynæ.
	13. Monoperigynæ.
	14. Monohypogynæ.
VI. Cryptogamæ.....	15. Acotyledones.
C. Cellulares.	
VII. Cellulares.....	

From the above it will be perceived, although some sneer at the natural system, because they do not understand it, and assert that every one has a method of his own, and quote De Candolle's as extremely distinct from that of Jussieu, that it is in fact founded on, and not differing in any essential point from, that of the Parisian botanist.

Mr Lindley, in his *Introduction to the Natural System of Botany*, has discarded nearly all these subdivisions as empirical, and substituted in their place one derived from the ovulum, being protected by a pericarp, or exposed without any covering to the influence of the pollen. This last is of very great importance, and is worthy of being

¹ Second Edition, p. 213. (1819).

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adopted; but any one who has glanced at his volume must have soon felt the great want of more minute divisions than he has adopted, however artificial they might be; nor do we think that he has compensated for the deficiency by a more judicious disposition of the orders.

We ourselves shall follow pretty closely that given by De Candolle, because, from his publishing a work containing all the known species arranged according to it, it is almost the only one that can be of use to a student of species. But while we do so, we shall subdivide his groups in the manner recommended by Jussieu; not that they are to be implicitly trusted, but that they may in some measure assist the reader while referring to the orders.

Characters of the orders.

We must now advert to the orders themselves; and these being great natural genera, in order to obtain characters for them, we must have an intimate knowledge of the structure of the organs of the component genera and species, so as to select such as are common to all, and of the greatest importance. Botanists having seen that the embryo gave most fixed characters for a general division, have looked to it also, and to the structure of the seed, as of great influence in limiting each order individually. This view was altogether omitted by Jussieu at the time the *Genera Plantarum* was given to the world, but is now frequently adopted as a criterion, when other and more easily examined points fail. The structure of the fruit we have already said to be useful for defining genera, and consequently must not be passed over while circumscribing an order; nor must the position of the seed be omitted. As to the carpel, the stigma affords few good marks; but the ovarium must be strictly attended to, especially as a contrast to the mature fruit, many plants having two or three cells in the ovarium, and but one by abortion in the fruit. Thus the structure of the ovary is in several of greater importance than that of the fruit. The apocarpous or syncarpous nature of the ovarium, upon which we have already dwelt, must be noticed. The position of the placenta and the ovules has likewise been esteemed of great value. The stamina, whether viewed relatively to their insertion, their adherence, proportional size, or number, and particularly the structure of the anther, and even the pollen, all indicate greater or less affinities in other points.

The floral envelopes must be considered in all their bearings, and even the inflorescence must not be neglected. The relative position, also, of one part of a flower to another, whether the number be symmetrical or complete, enables us often to clear up many difficulties. But it is not one of these alone in which we are to confide, but in a combination of them: two orders, differing solely by one character, being too closely allied, had better be united; a *clavis analytica*, therefore, such as has been given by Mr. Lindley in his introduction, can convey to us almost no idea of the orders, and, besides, has the disadvantage of not exhibiting the anomalies that so frequently occur.

Having exhausted all the parts of the flower, we may then turn our attention to the leaves; and here we may take advantage of a character that is intimately connected with the habit or external aspect of the order, and is consequently truly natural; we allude to the leaves being opposite or alternate, and with or without stipules. The presence or absence of pellucid dots, exhibiting a peculiar organization in the plant, must be carefully observed. Compound or simple leaves are often of use to enable us to refer a plant to a particular order. The mere shape of leaves is too variable, but the venation, or disposition of the nerves, upon which the shape of the leaf depends, as

the fruit does upon the ovary, although hitherto not much attended to, seems in many cases of considerable importance. As to the stem, the external variations, as erect or climbing, square or round, sometimes aid us, but in most orders afford us no assistance. The root has been rarely found of any avail.

We have again and again stated that we are not to take the characters of orders from any one organ individually, but from several. Each order may thus be expected to possess some points in common with several other orders, and by the number of these, and their value, as found from experience, we are able to trace the affinity between any one, and those that ought to be arranged in its vicinity. When several very important points are nearly the same in four or five different orders, though distinct in many others, a greater approximation is visible between themselves, than any of them exhibits to other orders: this has induced Mr. Brown to propose to erect orders into classes of a different kind from those of Jussieu; and he has happily succeeded in accomplishing this in several instances. Very few such classes or aggregate orders have, however, yet been formed, and therefore we shall not enter into their consideration farther than merely remark that this is, at present, greatly to be desired in the natural method, and that, when it shall be accomplished, and the whole distributed among a few great compound orders, we may be able to do away entirely with even the slight remains we now must admit into it, of an artificial or empirical arrangement.

It is now time that we proceed to enumerate and lay down the characters of the orders themselves. Jussieu constituted a hundred, and subjoined a list of many genera, either so little known, or so ill defined, that he could not refer them. By degrees, however, as light was thrown upon them, some were entered into known orders, while others exhibited the necessity of constructing additional ones. In his *Théorie Élémentaire*, in 1819, De Candolle enumerates 161 orders, but has since admitted many new ones in his *Prodromus*. Richard, in 1828, describes 162, but omits a few which he considered not well understood. Rudolphi, in 1830, gives 276; and about the same time Mr. Lindley has 272. Both Rudolphi and Lindley, however, carry the system of subdivision perhaps to excess; but as our object is here to give a view of the science at the present day, we shall admit almost all of them, arranging, however, the minor ones under a general head, to which, for conciseness, we shall give no character, and which may be viewed, if one pleases, as a class. To as short a definition of the orders as possible we shall annex a few remarks, which we trust may render this department more interesting.

ARRANGEMENT AND CHARACTERS OF THE NATURAL ORDERS.

I. VASCULARES.

A. EXOGENÆ. DE CAND. (DICOTYLEDONES. JUSS.)

DIV. I.—*Dichlamydeæ Thalamifloræ*. D. C.

(1. Hypopetalæ.¹ JUSS.)

Order 1. *Ranunculaceæ*. JUSS.

Sub-order 1. *Ranunculineæ*. Sepals distinct, various in number, from three to fifteen, but usually five, deciduous: estivation generally imbricated, sometimes valvate.

¹ In the divisions with several petals, the petals are sometimes, though rarely, abortive; it is then difficult to decide whether the plant comes here or belongs to the monochlamydeæ.

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Corolla of 5-15 petals¹ (or absent by abortion), distinct. Stamens distinct, indefinite in number: anthers adnate, extrorse. Ovaria seated on the torus, indefinite, or rarely (by abortion) solitary, usually apocarpous, and rarely somewhat syncarpous: style one to each ovary, simple: ovules solitary? or several, adhering to the inner edge. Carpels various, either achenia which are sometimes baccate, or follicular with 1-2 valves. Albumen between fleshy and horny. Embryo minute, inclosed in the albumen near its base.—Herbaceous, suffrutescent, or rarely shrubby plants. Leaves alternate, or sometimes opposite, simple but variously divided: petiole dilated and forming a sheath half-clasping the stem. Hairs, when present, simple.—Ex. *Clematis*, *Anemone*, *Ranunculus*, *Helleborus*.

Suborder 2. *Cimicifugeæ*. Sepals 4-5, distinct, deciduous: estivation imbricated. Petals 4-5, distinct. Stamens distinct, indefinite: anthers adnate, introrse. Ovaria seated on the torus, apocarpous, indefinite or rarely solitary: styles simple: ovules 2-3, or more, in each ovary, adhering to the inner margin. Carpels follicular or baccate. Seeds several or solitary, exarillate. Albumen between fleshy and horny. Embryo minute, inclosed at the base of the albumen.—Herbaceous or suffrutescent. Leaves simple, divided, alternate. Flowers racemose.—Ex. *Cimicifuga*, *Actæa*, *Zanthorrhiza*.

Suborder 3. *Pæoniæ*. Sepals five, foliaceous, persistent, unequal: estivation imbricated. Petals five, sometimes 6-10 by culture, distinct, somewhat equal, destitute of claws: estivation imbricated. Stamens very numerous: anthers adnate, introrse. Torus large, fleshy, annular, surrounding the base of the ovary. Ovaria 2-5, apocarpous: style none: stigmas sessile, thick, of two lamellæ: ovules numerous. Carpels follicular, tipped with the persistent stigmas, opening above by a longitudinal suture. Seeds several, exarillate: umbilicus prominent. Embryo minute, straight, inclosed at the base of the fleshy albumen.—Herbaceous or shrubby plants. Leaves alternate, divided. Flowers terminal, solitary, large.—Ex. *Pæonia*.

The first suborder is usually divided into four, *Clematideæ*, *Anemoneæ*, *Ranunculeæ*, and *Helleborineæ*, distinguished by a combination of the estivation, and position of the seed; but as it appears probable that in the ovary there is always at least two ovules, so the position of the seed, whether erect or pendulous, must depend entirely on which of the ovules, the upper or lower, becomes abortive. In general terms the *Ranunculaceæ* may be known from other *Hypopetalæ* by having adnate anthers that dehisce longitudinally, by a fruit of several distinct simple carpels, by a horny albumen, exarillate seeds, and exstipulate sheathing leaves.—Acridity, causticity, and poison, are the general characters of this order.

Order 2. *Dilleniaceæ*. D. C.

Sepals five, persistent. Corolla of five petals, deciduous, in a single row. Stamens numerous; filaments dilated either at the base or apex. Anthers adnate, introrse, bursting longitudinally. Ovaria definite, more or less distinct, with a terminal style and simple stigma; ovules ascending. Fruit of 2-5 distinct unilocular carpels, or of a similar number cohering together: the carpels are either capsular or baccate, and pointed by the style. Seeds several in each carpel, or only two or one by abortion, surrounded by a pulpy arillus. Testa hard. Embryo straight, minute, at the base of a fleshy albumen.—Leaves alternate, or rarely opposite, without stipules.—Ex. *Delima*, *Dillenia*.

Known by the longitudinally dehiscent anthers, distinct simple carpels, arillate seeds, fleshy albumen, and exstipulate leaves. In some genera, however, there is but one carpel, and in a few others they partially cohere. They are trees or shrubs, or even undershrubs.—They are generally astringent; most have the leaves covered with asperities, which are sometimes so hard as to permit of their use for polishing.

Order 3. *Magnoliaceæ*. Juss.

Suborder 1. *Wintereæ*. R. Br. Sepals 2-6, deciduous or persistent. Petals 2-30 (when more than five, in several rows). Stamens indefinite, distinct: anthers adnate, dehiscent longitudinally. Ovaria definite in one verticil, one-celled, ovules suspended. Stigmas sessile. Fruit of distinct carpels. Embryo very small, straight in the base of a fleshy albumen.—Leaves alternate, transparently dotted, coriaceous, with convolute deciduous stipules.—Ex. *Illicium*, *Wintera*.

Suborder 2. *Magnoliæ*. Juss. Sepals 3-6, deciduous. Petals 3-27, in several rows. Stamens indefinite, distinct; anthers adnate, long, bursting longitudinally. Ovaries numerous in several rows, one-celled: ovules ascending or suspended: styles short. Fruit of numerous carpels, which are either dehiscent or indehiscent, distinct or partially connate, sometimes samaroid. Embryo minute at the base of a fleshy albumen.—Leaves alternate, not dotted, coriaceous, with deciduous convolute stipules.—Ex. *Magnolia*, *Liriodendron*.

These two suborders, scarcely distinguishable from each other but by their leaves, may be characterized by their longitudinally dehiscent anthers, apocarpous ovaria, and stipulate leaves.—The first tribe is aromatic and stimulant; and the *Drymis Winteri* yields the winter's bark, well known for its resemblance to cinnamon. The second is not at all aromatic; but the flowers, which are large, are often strongly odoriferous; they have a bitter tonic taste, but the bark does not seem to possess either tannin or gallic acid. The bark of the tulip-tree has been said to equal Peruvian bark.

Order 4. *Anonaceæ*. Juss.

Sepals 3-4, persistent, often partially cohering. Petals 6, in two rows, coriaceous; estivation valvular. Stamens indefinite (very rarely definite): anthers adnate, extrorse, with a large connectivum. Ovaries usually numerous, separate or sometimes cohering, rarely definite: ovules solitary or several, erect or ascending. Fruit of a number of succulent or dry carpella, that are one or many-seeded, and distinct, or concrete into a fleshy mass. Testa of the seed brittle. Embryo minute at the base of a hard fleshy ruminated albumen.—Trees or shrubs. Leaves alternate, simple, without stipules.—Ex. *Anona*, *Guatteria*.

The apocarpous ovaria, ruminated albumen, and exstipulate leaves, are the general characteristics of this order.—Almost all possess a powerful aromatic taste and smell; in some the fruit contains much sugary mucilage, and is succulent and eatable; of this kind are the custard-apples, and the celebrated Cherimolia of Peru.

Order 5. *Menispermaceæ*. Juss.

Flowers usually unisexual, and very small. Sepals and petals having the same appearance, in one or several rows; three or four in each row, deciduous. Stamens monadelphous or occasionally free, sometimes opposite to the petals and equal to them in number, sometimes three or four times as many: anthers adnate, extrorse. Ovaria usually numerous, free or slightly united by their inner margin, unilocular. Drupes baccate, one-seeded, oblique,

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¹ For the sake of brevity, we shall seldom state, under the respective orders, that the stamens or petals are hypogynous or perigynous, trusting that this may be inferred from the divisions *Hypopetalæ*, *Peripetalæ*, and the like, which we have already explained. When, however, there is any discrepancy, we shall notice it.

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lunate, and compressed, or rarely a multilocular berry, with the cells many-seeded. Embryo curved, radicle superior. Albumen none, or in small quantity and fleshy.—Climbing shrubs, with alternate leaves and very minute flowers.—Ex. *Menispermum*, *Cissampelos*.

The stamens opposite the petals, apocarpous ovaria, minute unisexual flowers, and twining shrubby stems, point out this order.—The root of several species is bitter and tonic, and of some the seeds are narcotic. A few have been used in intermittent fevers. The columbo root, so esteemed for its tonic, antiseptic, and astringent qualities, belongs to the genus *Menispermum*.

Order 6. *Berberideæ*. VENT.

Sepals 3-4-6, deciduous, in a double row, accompanied externally with petaloid scales. Petals equal to the sepals in number and opposite to them, or twice as many; often furnished in the inside with an appendage at the base. Stamens equal in number to the petals and opposite to them: anthers bilocular, the cells opening elastically with a valve from the bottom to the top. Ovary solitary, unilocular, containing 2-12 ovules, which are erect, or attached laterally to the inner margin, and forming there one or two rows: style sometimes lateral, short: stigma orbicular. Fruit baccate or capsular, indehiscent. Albumen fleshy or horny. Embryo straight, in the axis of the albumen: radicle pointing to the hilum: cotyledons flat.—Leaves alternate, without stipules.—Ex. *Berberis*, *Leontice*.

The single simple carpel, stamens opposite to the petals, and the anthers opening by valves, will readily distinguish this from the other Hypopetalæ. This kind of anther is of rare occurrence, but equally exists in the Laurineæ, Hamamelideæ, and Atherospermeæ. There are no stipules, the spines being the true leaves, of which the parenchyma has disappeared, and the nerves become indurated: what are commonly called leaves are those formed by the development of the leaf-buds. All are articulated with the petiole, and hence the leaves are in reality compound, although apparently simple. The stamens of many exhibit great irritability.—The berries of some species of *Berberis* are acid and astringent, and form with sugar an agreeable preserve.

Order 7. *Podophyllaceæ*. D. C.

Sepals 3-4. Petals in two or three rows, each equal in number to the sepals. Stamens 12-18, arranged in two, three, or more rows; filaments filiform: anthers terminal, introrse, opening by a double longitudinal line. Torus small. Ovary solitary: style one, short: stigma somewhat peltate. Fruit succulent or a capsule, one-celled. Seeds indefinite, attached to a lateral placenta. Embryo small, at the base of a fleshy albumen.—Plants herbaceous. Leaves broad and lobed, without stipules.—Ex. *Podophyllum*, *Jeffersonia*.

This order is allied to the Berberideæ, to the last tribe of Ranunculaceæ, and to Papaveraceæ, with which some botanists unite it.—The roots possess purgative properties.

Order 8. *Hydropeltideæ*. D. C.

Sepals 3-4, alternate with the sepals. Stamens two or more times the number of the petals: anthers linear, introrse, continuous with the filament. Torus inconspicuous. Ovaries two or more, stigmas simple. Fruit indehiscent, tipped with the indurated styles, containing one or two pendulous seeds. Embryo inclosed in the endosperm, is fungilliform, and seated at the base of a firm somewhat fleshy perisperm.—Aquatic plants, with floating leaves.—Ex. *Hydropeltis*, *Cabomba*.

The situation of this order was formerly involved in some doubt, as Richard, mistaking the endosperm, insisted that the embryo was fungilliform, or shaped like a little mushroom or a small nail, and perfectly monocotyledo-

nous. De Candolle unites it to Podophyllaceæ as a section. In some points the above, and the only two genera, approach very closely to the Nymphaeaceæ, to which Brown unites them; and *Hydropeltis* is somewhat related to *Caltha* among the Ranunculaceæ.

Order 9. *Nymphaeaceæ*. SALISB.

Suborder 1. *Nelumboneæ*. D. C. Sepals 4-5. Petals numerous in many rows. Stamens indefinite in several rows: filaments petaloid: anthers adnate, introrse, opening by a double longitudinal cleft. Torus fleshy, elevated, very large, inclosing in hollows of its substance the numerous separate ovaria, which have a simple style and stigma. Nuts inserted, but loose, in the hollows of the torus, 1-2-seeded. Perisperm 0: endosperm conspicuous. Embryo large, with two fleshy cotyledons.—Aquatic herbs with peltate leaves. Ex. *Nelumbium*.

Suborder 2. *Nymphaeæ*. D. C. Sepals and petals numerous, passing into each other. Stamens indefinite, in several rows: filaments petaloid: anthers adnate, introrse, opening by two longitudinal clefts. Torus large, fleshy, surrounding more or less completely the ovaria, styles, and stigmas. Ovaria apocarpous, attached to the inside of the bottle-shaped, indehiscent torus, on the top of which are the radiate stigmas. Seeds very numerous in each carpel, attached to spongy placenta that form the false dissepi-ments of the fruit. Endosperm fleshy, and, with the inclosed embryo, seated on the outside of the base of the farinaceous perisperm: cotyledons foliaceous.—Aquatic herbs, with peltate or cordate fleshy leaves.—Ex. *Nymphaea*, *Nuphar*.

We cannot see that these tribes can be separated, and we almost coincide with Brown, that the Hydropeltideæ may be added to this order. We have already (p. 49) sufficiently explained the structure of the fruit of *Nuphar*.—Their medical properties are not well understood, but they are reputed to be narcotic and sedative.

Order 10. *Sarraceniaceæ*. TURP.

Sepals five, persistent: estivation imbricated. Petals five. Stamens indefinite: anthers adnate, bilocular, bursting internally and longitudinally. Ovary five-celled: style single: stigma persistent, much dilated, peltate, with five angles. Capsule quinque-locular, valves five, loculicide. Seeds very numerous, small: placenta large at the inner angle of the cells. Albumen copious. Embryo cylindrical, lying near the base of the seed, with the radicle pointing to the hilum.—Herbaceous bog plants. Leaves radical, with a hollow petiole, at the apex of which is the lamina covering the orifice of the petiole like a lid. Scapes one-flowered.—Ex. *Sarracenia*.

On account of the stigma this family has been usually placed near Papaveraceæ. Mr Lindley suggests its affinity to *Dionæa*, wherever that be placed.

Order 11. *Papaveraceæ*. JUSS.

Sepals two, deciduous. Petals four cruciate (or a multiple of four), regular, rarely wanting. Stamens eight, or some multiple of four, usually indefinite, inserted in four parcels, one of which adheres to the base of each petal: anthers bilocular, erect. Ovary solitary: style short or none: stigmas alternate with the placenta, two or many, in which case they are stellate on the flat apex of the ovary. Fruit one-celled, either siliquiform with two, or capsular with several, parietal placenta. Seeds numerous. Albumen between fleshy and oily, at the base of which is a minute straight embryo, with plano-convex cotyledons.—Plants herbaceous or shrubby, with a milky juicc. Leaves alternate, divided. Peduncles long, one-flowered.—Ex. *Papaver*, *Eschscholtzia* (Plate CXXII.)

This order approaches to the Podophylleæ on the one hand, and to the Crucifereæ on the other. In *Eschscholtzia* the apex of the peduncle dilates, and bears on it the

organs of reproduction; the calyx in it is apparently of one piece, and separates like an operculum from the very base. —Narcotic properties prevail in this family, except in the seed, which is oily. The narcotic principle of opium is an alkaline substance called Morphia.

Order 12. *Fumariaceæ*. D. C.

Sepals two, deciduous. Petals four, cruciate, one or both of the two outer saccate at the base, the two inner callous at the apex, where they cohere and inclose the anthers and stigma. Stamens six, diadelphous, opposite the outer petals: anthers of the middle stamens of each parcel two-celled, of the outer ones one-celled. Ovary one-celled: style filiform, stigma with two or more points. Fruit a one-seeded utricle, or a two-valved, two-seeded, indehiscent capsule, or a two-valved, polyspermous stigma. Seeds with an arillus attached to narrow parietal placenta. Albumen fleshy. Embryo nearly straight, minute, eccentric. —Herbaceous plants, with a watery juice. Leaves alternate, multifid. —Ex. *Fumaria*, *Dielytra*.

Nearly allied to the last order, but distinct in the definite diadelphous stamens and irregular corolla. The central anthers being alone bilocular, suggests that two of the others make but one, or that there is in reality here but four stamens, one before each petal. And even Mr Lindley has demonstrated that the inner petals form a corolla, while the outer ought to be viewed as sepals: the deciduous sepals above described would thus be bracteæ. —The *Fumariaceæ* are slightly bitter, and act as diaphoretics and aperients.

Order 13. *Cruciferae*. Juss.

Sepals four; two corresponding to the two stigmas are anterior and posterior, and narrower than the others; two are lateral, or corresponding to the valves, broader, concave at the base, gibbous or spurred. Corolla cruciform. Petals four, alternate with the sepals, nearly equal, deciduous. Stamens six; the two opposite the lateral sepals are solitary, shorter, and occasionally toothed; four in pairs opposite the anterior and posterior sepals, longer, generally free, sometimes connate, or furnished with a tooth on the inside: anthers bilocular, introrse. Torus with several green glands between the petals and the stamens, and ovary. Ovary syncarpous, bilocular. Placenta parietal, usually meeting in the middle, and forming a spurious dissepiment. Stigmas two, opposite the placenta, or anterior and posterior. Fruit a silique or silicula, rarely one-celled and indehiscent, usually spuriously bilocular, and dehiscing by two valves separating from the placenta; one or many-seeded. Seeds campulitropous, pendulous, attached in a single row by a funiculus to each side of the placenta. Albumen none. Embryo with the radicle folded up on the cotyledons, which are next the placenta. —Herbaceous plants, or very seldom suffruticose. Leaves alternate. —Ex. *Draba*, *Lepidium*, *Sinapis*, *Bunias*.

This order having six tetradynamous stamens, can scarcely be confounded with any other. We have already explained (p. 49) the structure of the fruit according as Mr Lindley and we understand it. Mr Brown gives a different explanation, upon which we have not room to enter. —The general character of the *Cruciferae* is to possess antiscorbutic and stimulant qualities, with an acrid flavour. They contain much azote, and have therefore, when in a putrescent state, been occasionally used in the manufacture of Prussian blue, when the horns and hoofs of cattle could not be had in sufficient quantity.

Order 14. *Capparideæ*. Juss.

Sepals four. Petals four, cruciate, usually unguiculate and unequal. Stamens four, six, or indefinite, but in general some high multiple of four. Torus hemispherical or elongated, often bearing glands. Ovary stalked: style

one, filiform, or sometimes none. Fruit unilocular, siliqueform, or fleshy and indehiscent, rarely one-seeded, usually with two polyspermous placenta at the margin of the valves or carpels. Seeds generally reniform, with a thickened tegmen. Albumen none. Embryo incurved: cotyledons foliaceous, somewhat flat. —Leaves alternate, stalked, undivided, or palmate. Stipules none, or spinouscent. —Ex. *Cleome*, *Capparis*.

Allied to *Cruciferae*: indeed Linnæus arranged some of the genera in *Tetradynamia*. The stipitate ovary, and the fruit, indicates some affinity to *Passifloreæ*. —The properties are not very dissimilar from those of the last order. The root of *Cleome dodecandra* is used as a vermifuge.

Order 15. *Resedaceæ*. D. C.

Sepals 4-6, persistent. Petals 4-6, alternate with the sepals, unequal; the upper ones with a scale-like claw and palmatipartite limb, the lateral ones 2-3-lobed, the lower smaller and entire. Stamens 10-24: filaments more or less and variously united: anthers bilocular, erect, opening longitudinally. Torus very short, or resembling a stipes, bearing under the stamens an obtuse nectariferous scale. Ovaria 3-6, each with one style, free, or united into a syncarpous ovary. Fruit of 3-6 few-seeded follicles, dehiscing internally; or a capsule, unilocular, polyspermous, 3-6-valved, indehiscent except at the apex. Placenta parietal in the middle of the valves or follicles. Seeds somewhat pendulous, the testa crustaceous. Albumen very thin and fleshy. Embryo curved: radicle superior: cotyledons fleshy. —Herbaceous plants, with alternate leaves; stipules none, or represented by glands. —Ex. *Reseda*.

Most botanists agree in bringing this family near to the *Capparideæ*, except Mr Lindley, who conceives it to be more nearly allied to *Euphorbiaceæ* and *Datisceæ*. —*Reseda luteola* yields a yellow dye, and *R. odorata* or *Mignonette* is well known for its fragrant flowers.

Order 16. *Flacourtiaceæ*. Rich.

Sepals 4-7, cohering slightly at the base. Petals equal in number to, and alternate with, the sepals, sometimes wanting. Stamens equal in number to the petals or some multiple of them, occasionally changed into nectariferous scales. Ovary roundish, sessile or slightly stalked: style none, or filiform: stigmas several, more or less distinct. Fruit unilocular, containing a thin pulp, either fleshy and indehiscent, or capsular with 4-5 valves. Placenta parietal, branching all over the inner surface of the valves. Seeds few, thick, often enveloped in a pellicle formed by the withered pulp. Albumen fleshy, somewhat oily. Embryo straight in the axis, with the radicle turned towards the hilum: cotyledons flat, foliaceous. —Leaves alternate, simple, without stipules. Flowers sometimes unisexual. —Ex. *Patrisia*, *Flacourtia*, *Kiggelaria*, *Erythrospermum*.

The peculiar placenta of this order occurs in no other of the Dicotyledones. In some things they resemble the *Capparideæ*. —The fruit of several species of *Flacourtia* is eaten: that of *Hydnocarpus* is used in Ceylon for poisoning fish, which at the same time renders them unfit for food.

Order 17. *Bixineæ*. KUNTH.

Sepals 4-7, distinct, or cohering at the base: estivation imbricated. Petals five, resembling the sepals, or none. Stamens indefinite, free, inserted on the discoid torus: anthers bilocular. Ovary sessile, one-celled: ovules attached to 2-7, narrow, parietal placenta: style single, or 2-4 cleft. Fruit capsular or baccate, one-celled, many seeded: placenta in the middle of the valves. Seeds enveloped in pulp. Albumen fleshy, or very thin, including the embryo, which is slightly curved: radicle pointing to the hilum: cotyledons foliaceous. —Leaves alternate, simple, with deciduous stipules. —Ex. *Prockia*.

From the last family this is chiefly to be distinguished

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by the narrow and not ramified placenta: still Richard unites them; and we would have also done this, were it not that Mr Lindley places upwards of 120 orders between them, and does not even notice their affinity. Don suggests that the name Prockiaceæ ought rather to be adopted, for that *Bixa* is nearly related to *Sloanea* and *Ablania*, among the Tiliaceæ. This order also bears some relation to the Cistineæ and Homalineæ.—The pulp surrounding the seeds of *Bixa* (or the Arnotto) is purgative and stomachic.

Order 18. *Cistineæ*. Juss.

Sepals five, persistent, unequal; the three inner with a twisted estivation. Petals five, very caducous; estivation corrugated, and twisted in an opposite direction to that of the sepals. Stamens indefinite, free: anthers adnate. Ovarium syncarpous, one or many-celled: style single: stigma simple. Fruit capsular, 3-5-10-valved, one-celled, with parietal placenta in the middle of the valves, or imperfectly 5-10-celled, with dissepiments proceeding from the middle of the valves, and meeting in the axis of the fruit. Seeds indefinite. Embryo either spiral or curved, in the midst of a mealy albumen: radicle at the opposite extremity from the hilum.—Shrubs or herbaceous plants. Leaves usually opposite below, alternate above, with or without stipules.—Ex. *Cistus*, *Helianthemum*.

The inverted embryo and loculicidal dehiscence are what must be chiefly relied on in defining the limits of this order.—The balsamic substance called Labdanum, which must not be confounded, as some ignorant people have done, with Laudanum, is obtained from *Cistus Creticus*.

Order 19. *Violariææ*. D. C.

Sepals five, persistent; estivation imbricated. Petals five, usually withering, generally unequal; estivation obliquely convolute. Stamens five, alternate with the petals, or occasionally opposite to them, inserted on the hypogynous disc or torus: anthers bilocular, introrse, closely approximated, or united laterally to each other: filaments dilated, elongated beyond the anthers; two of them, in the irregular flowers, usually with an appendage at the base. Ovary one-celled, with many (rarely one) ovules: style single, usually declinate, with an oblique cucullate stigma. Capsule three-valved, loculicide, or bearing the placenta on the middle of the valves. Embryo straight, erect, in the axis of a fleshy albumen.—Leaves alternate, rarely opposite, with persistent stipules and an involute vernation.—Ex. *Viola* (Plate CXVII.), *Alsodeia*.

The irregular flowered genera are easily distinguished from those of other orders; but those with regular flowers, constituting the section Alsodineæ, are so with more difficulty. Of the latter, *Pentaloba* was said to have five placenta, but that seems contradicted by Brown. The placenta are opposite to the three outer sepals.—The roots of all the species are more or less emetic, and some of them are substituted for Ipecacuanha.

Order 20. *Droseraceæ*. D. C.

Suborder 1. *Droserææ*. Sepals five, persistent, equal; estivation imbricated. Petals five. Stamens free, withering, five and alternate with the petals, or ten: anthers bilocular, bursting longitudinally. Ovary one: styles 3-5, slightly connected at the base or distinct, bifid or branched. Capsule 3-5-valved, loculicide, one-celled, or spuriously three-celled, the dissepiments being formed by the placentas meeting in the axis. Seeds without an arillus; testa sometimes loose, and distinct from the tegmen. Embryo straight, erect, in the axis of a fleshy or cartilaginous albumen.—Leaves alternate, furnished (except in *Aldrovanda*), with glandular hairs, with a circinate vernation. Stipules in the form of cilia at the base of the petioles.—Ex. *Drosera*, *Aldrovanda*.

Suborder 2. *Parnassieæ*. Sepals five; estivation imbricated. Petals five, alternate with the sepals. Stamens 10-20, some of them often sterile: anthers bilocular, bursting longitudinally. Ovary solitary, unilocular: style none, and four sessile stigmas opposite the placenta, or one with a lobed stigma. Fruit a capsule, one-celled, 4-5-valved and loculicide; or indehiscent, and then the placenta is only at the base. Seeds numerous. Albumen 0. Embryo erect, or the radicle pointing to the hilum.—Bog plants. Leaves nearly all radical, without glandular hairs.—Ex. *Parnassia*, *Dionæa*.

Some botanists describe the stamens of *Droseraceæ* as perigynous, which, however, we do not think distinctly made out; but were that true, they would approach to the Saxifrageæ. As to our second suborder, *Parnassia* has been referred by Lindley, as was already suggested by Brown, to the Saxifrageæ, but by Don to the Hypericineæ. Richard, again, who affirms it to be a genuine *Droseraceæ*, places *Dionæa* among the Hypericineæ; while Lindley retains it, for the time, among the *Droseraceæ*, but pointing out an affinity with the *Sarraceniaceæ*. But the four stigmas opposite to the placenta in *Parnassia* seem to indicate that these are each composed of two half stigmas belonging to different carpels, and consequently that the styles have a tendency to become united, although bifid in their upper portion, as in *Drosera*. The stigma of *Dionæa* may be similarly explained. The syncarpous ovary is at variance with the Saxifrageæ; and, in the Hypericineæ, the styles alternating with the margins of the carpels, and the sometimes capitate stigmas, demonstrate that the styles are there free and the stigmas undivided. Hence we have brought them under *Droseraceæ*, from which they chiefly differ by their habit and absence of albumen.—The genus *Drosera* is rather acid, slightly acrid, and reputed poisonous to cattle.

Order 21. *Polygaleæ*. Juss.

Sepals five, very irregular, distinct; three exterior, of which one is superior and two inferior; two interior, petaloid, lateral: estivation imbricated. Petals unequal, usually three, of which one is inferior, while the others alternate with the upper and lateral sepals. Sometimes there are five, the two additional ones being minute, and between the lateral and lower sepals: the lower petal (called the *keel*), is sometimes entire, and then naked or crested, or sometimes three-lobed without a crest. Stamens eight, unequal, ascending, combined into a tube, which is split opposite to the upper sepal: anthers one-celled, opening by a terminal pore, or very rarely by a longitudinal cleft. Ovarium bilocular, with placenta in the axis; the cells anterior and posterior, the latter often abortive: ovules one, rarely two, pendulous: style simple, curved: stigma simple. Fruit loculicide, or sometimes indehiscent. Seeds pendulous, with a caruncula next the hilum. Albumen copious, fleshy, rarely reduced to a thin gelatinous plate. Embryo straight, with the radicle next the hilum.—Leaves without stipules.—Ex. *Polygala*, *Securidaca*.

The petal being inferior, and the sepal superior, distinguish this family from the Leguminosæ, to which, in some respects, they bear greater affinity than to any other. *Krameria*, usually referred here, has, we think, been misunderstood, and we therefore exclude it.—Bitterness is the principal property, but the roots of *Polygala Senega* and *sanguinea* are stimulant, diuretic, emetic, purgative, expectorant, sialagogue, sudorific, and emmenagogue.

Order 22. *Tremandreeæ*. R. BROWN.

Sepals 4-5, nearly equal, slightly cohering at the base, deciduous; estivation valvate. Petals 4-5, alternate with the sepals, deciduous; in estivation involute, much larger than the sepals, and including the stamens. Stamens distinct, 8-10, two before each petal: anthers 2-4-celled,

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opening by a terminal pore. Ovarium bilocular: ovules 1-3 in each cell, pendulous: style one: stigmas 1-2. Capsule two-celled, two-valved, loculicide. Seeds pendulous, with a caruncular appendage at the apex, but with a naked hilum. Embryo cylindrical, straight, in the axis of a fleshy albumen: radicle next the hilum.—Heath-like shrubs, with usually glandular hairs. Leaves alternate or verticillate, without stipules. Pedicels solitary, axillary, one-flowered.—Ex. *Tetralthea*, *Tremandra*.

Perhaps nearest allied to Polygalæ, but differing in several particulars. They are all from New Holland.

Order 23. *Tamariscineæ*. DESV.

Calyx 4-5-partite, persistent: estivation imbricated. Petals 4-5, inserted on the receptacle, marcescent; estivation imbricated. Stamens equal to the petals in number, or twice as many, free or monadelphous. Ovarium one-celled: style short: stigmas three. Capsule three-valved, one-celled, loculicide, polyspermous. Placentæ sometimes only at the base of the capsule. Seeds erect or ascending, comose. Albumen 0. Embryo straight, with the radicle next the hilum.—Shrubs or herbs. Leaves alternate, like small scales.—Ex. *Tamarix*, *Myricaria*.

Placed by De Candolle and most botanists among the orders with perigynous stamens; but Ehrenberg has lately shown that these organs are there hypogynous. To us also they appear hypogynous, and we have therefore inserted this order next the Frankeniaceæ. The insertion of the petals is more difficult to be traced, whether they be like the stamens, as is most probable, or, as some state, inserted into the very base of the calyx.—The bark is slightly bitter and astringent. The ashes of some species contain much sulphate of soda. The manna of Mount Sinai, consisting wholly of mucilaginous sugar, is produced by a variety of *Tamarix Gallica*.

Order 24. *Frankeniaceæ*. ST HIL.

Sepals five, slightly cohering at the base. Petals five, alternate with the sepals. Stamens opposite to the sepals, five, eight, or indefinite: filaments usually very short, free: anthers bilocular, extrorse, bursting longitudinally, or by two terminal pores. Ovarium one-celled, with three parietal placentæ: style slender, simple, or trifid. Capsule one-celled, three-valved, septicide. Seeds numerous, very minute. Embryo straight, cylindrical, in the axis of a fleshy albumen: radicle turned towards the hilum.—Leaves alternate or verticillate, usually furnished with stipules; but which are wanting in *Frankenia*.—Ex. *Frankenia*, *Sauvagesia*.

The flowers are regular, except in *Luxemburgia*. In *Lavradia* there is an internal monopetalous corolla; in *Sauvagesia* an internal pentapetalous one, between which and the true corolla are many capillary or clavate filaments: these accessory parts being abortive stamens. This family is closely allied to the Cistineæ, Violarieæ, and Droseraceæ, from which it differs by the septicidal dehiscence.

Order 25. *Elatineæ*. CAMBESS.

Sepals 3-5, distinct, or slightly connate at the base. Petals alternate with the sepals. Stamens equal in number to, or twice as many as, the petals. Ovarium 3-5-celled: styles 3-5: stigmas capitate. Placentæ in the axis. Capsule 3-5-celled, 3-5-valved, loculicide. Seeds numerous. Albumen 0. Embryo cylindrical: radicle next the hilum.—Annual marsh plants. Leaves opposite, with small inconspicuous stipules.—Ex. *Elatine*, *Bergia*.

The capitate stigmas, want of albumen, and loculicidal dehiscence, have caused this small group to be separated from the Caryophyllæ. The seeds are usually cylindrical and curved; and the embryo has the same shape, and is not straight, as some have described it.

Order 26. *Caryophyllaceæ*. JUSS.

Sub-order 1. *Vivianieæ*. Sepals five, united into a

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monophyllous, campanulate, 5-toothed calyx, persistent. Petals five, unguiculate, persistent. Stamens ten: filaments filiform: anthers erect, bilocular, bursting longitudinally. Ovarium 3-celled: ovules two in each cell, horizontal, approximated: style short: stigmas three, linear, papillose on the inner surface. Capsule 3-celled, 3-valved, loculicide. Seeds two in each cell, attached closely together to about the middle of the axis, campulitropous. Albumen fleshy, copious. Embryo filiform, curved round the albumen.—Under shrubs. Leaves opposite, tomentose beneath.—Ex. *Viviania*.

Suborder 2. *Caryophylleæ*. Sepals 4-5, distinct or cohering in a tube, persistent. Petals 4-5, unguiculate, sometimes wanting. Stamens usually double the number of the petals, or, if equal, alternate with them. Filaments subulate, sometimes cohering. Anthers erect, bilocular, opening longitudinally. Ovarium one, syncarpous, often stipitate. Stigmas 2-5, sessile, filiform; papillose on their inner surface. Capsule 2-5-valved, one-celled, or imperfectly (rarely completely) 2-5-celled, opening usually by twice as many teeth as stigmas, sometimes by valves. Placenta in the axis of the fruit. Seeds indefinite, or rarely definite, campulitropous. Albumen mealy, round which the embryo is curved.—Leaves opposite and entire, often connate at the base, without stipules.—Ex. *Dianthus*, *Cerastium*.

After Don, we unite *Viviania* (*Macræa*, LINDL., and *Cæsarea*, ST HIL.) to this order; but perhaps its affinity is greater with *Ledocarpum*, which most authors place in the great group of Geraniaceæ. The petals of *Viviania* are scarious. We are very doubtful if any of the true Caryophylleæ have complete dissepiments. *Hymenella* and *Physa* are little known, and most of, if not all, the genus *Mollugo* must be removed, the definite stamens being alternate with the sepals, as in Portulacæ. The number of teeth at the apex of the capsule demonstrate that the dehiscence, if perfect, would have been loculicidal.—A few have sponaceous properties. They are all very insipid.

Order 27. *Malvaceæ*. JUSS.

Sepals five, rarely 3-4, more or less cohering at the base, often bearing an external calyx or involucre: estivation valvate. Petals equal in number to the sepals: estivation twisted. Stamens monadelphous, indefinite, or rarely as few as the petals. Anthers one-celled, reniform, bursting transversely. Ovarium formed by the union of several carpels round a common axis, either distinct or cohering. Styles as many as the carpels, united or free. Fruit capsular or baccate: carpels one or many-seeded, sometimes closely united, sometimes separate or separable. Dehiscence loculicidal or septicidal. Albumen 0, or in very small quantity. Embryo curved: cotyledons twisted and doubled up.—Leaves alternate, stipulate. Hairs stellate.—Ex. *Lavatera*, *Hibiscus*, *Sida*.

The affinity between Malvaceæ and Caryophyllaceæ is very obscure. De Candolle considered the Lineæ as a connecting order; but that differs exceedingly from both in the structure of the seed, and, according to St Hilaire, ought to form a part of the Geraniaceæ.—All abound in mucilage, and are destitute of unwholesome qualities. Cotton is the covering of the seed in the genus *Gossypium*. From the *Althæa officinalis* is prepared, in France, the valuable tracing paper, known by the name of *papier végétale*.

Order 28. *Bombaceæ*. KUNTH.

Calyx gamosepalous, campanulate or cylindrical, truncate or quinque-partite, with a few minute bracteas on the outside. Petals five, regular, or none: estivation twisted. Stamens five, ten, fifteen, or more: filaments cohering at the base into a tube, which is soldered to the tube of the petals, divided above into five parcels, each of

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which bears one or more anthers, intermixed sometimes with barren filaments: anthers one-celled, linear. Ovary of five (rarely ten) carpels, either strictly cohering or partly distinct: styles as many as the carpels, free, or more or less cohering. Placentæ in the axis. Fruit variable, capsular, or indehiscent, usually with five valves and loculicide. Seeds often inclosed in a woolly or pulpy covering; sometimes with a fleshy albumen and flat cotyledons; sometimes exalbuminous with wrinkled or convolute cotyledons.—Leaves alternate, with stipules. Pubescence on the herbaceous parts stellate.—Ex. *Bombax*, *Helicteres*.

These were separated from Malvaceæ by Kunth and De Candolle, but again united by St Hilaire: they chiefly differ by the calyx not being decidedly valvate in estivation, and by the polyadelphous stamens.—Like the Malvaceæ, they are mucilaginous, and possess no deleterious properties. The dried leaves of *Adansonia*, or the Baobab tree, have been used in cases of diarrhœa and fevers; its fruit also is frequently eaten; and the expressed juice mixed with sugar has been valued in putrid fevers. The seeds of some are covered with long hairs, as in the true cotton plant.

Order 29. *Byttneriaceæ*. R. BROWN.

Calyx naked, or with an involucre: sepals five, more or less united at the base: estivation valvate. Petals five or none, often saccate at the base, and variously lengthened at the apex: estivation convolute. Stamens equal to the number of the petals, or some multiple of them, more or less monadelphous, some of them often sterile: anthers bilocular, extrorse. Ovary of five (rarely three) carpels, more or less syncarpous: styles as many as the carpels, free or united: ovules ascending, 2-3 or many in each carpel. Capsule 3-5-celled, 3-5-valved. Seeds with a strophiolate apex, often winged. Albumen oily or fleshy, rarely wanting. Embryo straight: radicle inferior: cotyledons foliaceous, flat and plaited, or rolled round the plumula; or, in the exalbuminous seeds, very thick.—Trees or shrubs. Pubescence often stellate. Leaves alternate, simple, exstipulate.—Ex. *Sterculia*, *Byttneria*, *Lasiopetalum*, *Hermannia*, *Dombeya*, *Wallichia*.

The six genera we have cited as examples have been made the types of as many sections, and even, by some botanists, of as many different orders. As a group, however, on the other hand, they have been united by St Hilaire to the Malvaceæ, although differing in their bilocular anthers. They form the passage to the next order, from which they differ by their monadelphous stamens. In *Sterculia* and *Erythropsis* the carpels are distinct, and in *Waltheria* there is but one, four being abortive.—They abound in mucilage. The Kola of the African travellers is got from the seeds of *Sterculia acuminata*, and Chocolate from those of *Theobroma Cacao*.

Order 30. *Tiliaceæ*. JUSS.

Suborder 1. *Tilia*. Sepals 4-5: estivation valvate, rarely imbricated. Petals 4-5, rarely wanting. Stamens free, usually indefinite: anthers bilocular, dehiscing longitudinally. Torus with 4-5 glands at the base of the petals. Ovary solitary, of 4-10 carpels: style one: stigma with as many lobes as carpels. Fruit dry, multilocular, with several seeds in each cell; or by abortion unilocular and one-seeded. Embryo erect, in the axis of a fleshy albumen: cotyledons flat, foliaceous.—Leaves alternate, stipulate. Petals entire.—Ex. *Tilia*, *Corchorus*.

Suborder 2. *Elæocarpeæ*. JUSS. Sepals 4-5, without an involucre: estivation valvate. Petals 4-5: estivation imbricated. Torus large, discoid, usually with glands. Stamens 15-20: filaments short, free: anthers long, bilocular, opening at the apex by a double fissure. Ovary multilocular: style one: stigmas equal to the number of carpels, sometimes united. Fruit various, indehiscent, dry, drupaceous, or valvular and loculicide, sometimes by

abortion one-celled. Seeds two or more in each cell. Albumen fleshy. Embryo erect: cotyledons flat, foliaceous.—Leaves alternate, sometimes approximated in pairs, with deciduous stipules. Petals lobed or fimbriated, sometimes entire.—Ex. *Elæocarpus*, *Aristotelia*.

The large discoid torus, distinct stamens, and bilocular anthers, serve to distinguish this order from the Malvaceæ and others allied to them; at the same time De Candolle very properly suggests that Malvaceæ, Bombaceæ, Byttneriaceæ, and Tiliaceæ, may all form one group or class, remarkable, as he says, for the valvate estivation of the calyx; for although it be now known that *Sloanea* and *Ablania* have it imbricated, yet these have so much affinity with *Bixa*, that the three may be considered as intermediate between the Bixineæ (or more properly Prockiaceæ) and Tiliaceæ.—The *Tilia* are mucilaginous. The fruit of some is succulent and eatable.

Order 31. *Dipterocarpeæ*. BLUME.

Calyx tubular, five-lobed, unequal, naked, persistent, and afterwards enlarged: estivation imbricated. Petals sessile, slightly connected at the base: estivation twisted. Stamens indefinite: filaments dilated at the base, free or irregularly cohering: anthers erect, bilocular, subulate, opening by terminal fissures. Torus small, not discoid. Ovary with few cells: ovules in pairs, pendulous: style and stigma simple. Fruit coriaceous, one-celled by abortion, three-valved or indehiscent, surrounded by the calyx. Seed solitary. Albumen none. Radicle superior: cotyledons twisted and crumpled, or unequal and obliquely incumbent.—Trees abounding in resin. Leaves alternate: vernation involute. Stipules deciduous, convolute.—Ex. *Dipterocarpus*, *Shorea*.

Allied to *Elæocarpeæ*, and also to the Malvaceæ, and in some few respects to Guttiferæ, but easily distinguished by the enlarged foliaceous unequal segments of the calyx investing the fruit.—The camphor tree of Sumatra belongs to this order. The fruit of the *Vateria indica*, when boiled, yields a kind of tallow.

Order 32. *Chlenaceæ*. THOUARS.

Involucre 1-2-flowered, persistent. Sepals three, small. Petals 5-6, broader and sometimes cohering at the base. Stamens rarely 10, usually indefinite: filaments united at the base into a tube, or adhering to the base of the petals: anthers roundish, syngenesious or free, bilocular. Ovary solitary, trilocular: style one, filiform: stigma trifid. Capsule three-celled, or by abortion one-celled. Placenta central. Seeds solitary or numerous, suspended. Embryo in the axis of a fleshy or horny albumen: cotyledons foliaceous, undulated.—Leaves alternate, with stipules.—Ex. *Sarcolena*, *Leptolæna*.

From this order Hugonia ought certainly to be excluded, it only differing from the Byttneriaceæ (Suborder Dombeyaceæ) by the imbricated, and not valvular, estivation of the calyx. Jussieu, from considering the union of the petals at the base, refers Chlenaceæ to the neighbourhood of the Ebenaceæ. All the species are natives of Madagascar, and very little known.

Order 33. *Ternstræmiaceæ*. MIRB.

Sepals five, concave, coriaceous, deciduous, the innermost often the largest: estivation imbricated. Petals five, often combined at the base, alternate with the sepals. Stamens indefinite: filaments often cohering at the base into one or more parcels, and united to the petals. Ovary plurilocular, usually sessile on a discoid torus: ovules two or more, pendulous at the inner angle of each cell: styles 2-5: stigmas simple. Fruit 2-5-celled, coriaceous and indehiscent, or capsular and opening by valves. Seeds large, few, sometimes arillate. Albumen 0, or in very small quantity. Embryo either straight, or bent, or folded back: radicle next the hilum: cotyledons very large,

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sometimes longitudinally plaited, often containing oil.—Leaves alternate, coriaceous, exstipulate, now and then pellucido-punctate.—Ex. *Ternstroemia*, *Gordonia*, *Camellia*.

Cochlospermum has the dissepiments imperfect, and consequently the ovarium spuriously one-celled. In *Camellia*, from the effect of luxuriant cultivation, there are often six or seven petals, styles, and cells to the fruit. This order is allied to the *Aurantiaceæ*, and also to the *Guttiferæ*; but they also osculate with the *Hypericineæ*, *Marcgraaviaceæ*, and *Tiliaceæ*.—The properties of most of the species are little understood. An excellent table oil is obtained from the seeds of *Camellia oleifera*. The tea of commerce is produced by several species of *Thea* and *Camellia*.

Order 34. *Olacineæ*. MIRB.

Calyx small, of one piece, entire, or toothed, often finally becoming large and fleshy: estivation imbricated. Petals 3-6, distinct, or adhering in pairs by the intervention of stamina: estivation valvate. Stamens (fertile) definite, 3-10, alternate with the petals, mixed with others that are sterile and opposite to the petals: filaments compressed: anthers erect, bilocular, bursting longitudinally. Ovarium 1-3-4-celled: ovules 3-4, pendulous from the top of a central placenta: style simple: stigma 3-4-lobed. Fruit drupaceous, indehiscent, often surrounded by the enlarged calyx, one-celled, one-seeded. Seed pendulous. Albumen copious, fleshy. Embryo small, at the base of the albumen: radicle next the hilum.—Leaves simple, alternate, exstipulate, sometimes abortive.—Ex. *Olar*, *Ximenia*.

A very distinct order, although it be somewhat difficult to discover its proper place. Brown supposes the calyx above described to be bracteæ, and the petals a perianth, and consequently it would be placed near the *Santalaceæ*. Jussieu, again, admits the presence of both calyx and corolla, but that the last is monopetalous, and places the order near the *Sapotææ*.—Nothing is known of their medical properties.

Order 35. *Aurantiaceæ*. CORR.

Calyx urceolate or campanulate, short, 3-5-toothed, withering. Petals 3-5, broad at the base, sometimes slightly combined: estivation imbricated. Stamens equal in number to, or a multiple of, the petals: filaments flattened at the base, distinct, monadelphous, or polyadelphous: anthers erect. Torus conspicuous, discoid. Ovarium multilocular: style one: stigma one, somewhat divided, thickish. Fruit a hesperidium. Seeds attached to the axis, solitary or numerous, usually pendulous: raphe and chalaza usually very distinct. Albumen 0. Embryo straight: radicle next the hilum: cotyledons thick, fleshy: plumula conspicuous.—Trees or shrubs, abounding in volatile oil. Leaves alternate, often compound, articulated with a usually winged petiole.—Ex. *Citrus*, *Limonia*.

The oily receptacles dispersed over the whole plant, deciduous and compound leaves (always indicated by the joint connecting them with the petiole) distinguish this family from its allies.—The pulp of the fruit is more or less acid. The oil is volatile, fragrant, bitter, and exciting. The orange, lemon, citron, and lime, belong to this order.

Order 36. *Hypericineæ*. JUSS.

Sepals 4-5, distinct or cohering, unequal, persistent, with glandular dots: estivation imbricate. Petals 4-5, often dotted with black; veins oblique: estivation twisted. Stamens indefinite, polyadelphous (very rarely ten monadelphous): anthers versatile. Ovarium solitary: styles several, rarely connate: stigmas simple, sometimes capitate. Placentæ in the axis. Fruit baccate or capsular, of many cells and valves, septicide. Seeds minute, indefinite, very rarely solitary. Albumen none. Embryo

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straight: radicle next the hilum, inferior.—Juice resinous. Leaves dotted, usually opposite, and entire. Flowers generally yellow.—Ex. *Hypericum*, *Vismia*.

Allied on the one hand to *Guttiferæ*, and on the other, but more distantly, to *Cistineæ*. The juice of many species is purgative and febrifugal.

Order 37. *Reaumurieæ*. EHRENBERG.

Calyx 5-partite, persistent, surrounded externally with imbricated bracteæ. Petals five. Stamens definite and monadelphous, or indefinite and polyadelphous. Torus with or without glands. Ovarium solitary: styles slender, 2-4-5. Placentæ at the base. Capsule of two, four, or five cells, and as many valves, loculicide. Seeds definite, erect, hairy, large. Embryo straight, in the axis of a farinaceous albumen: radicle next the hilum.—Shrubs. Leaves fleshy, small, alternate, exstipulate. Flowers solitary.—Ex. *Reaumuria*, *Holachna*.

The petals and stamens are hypogynous. *Reaumuria* has peltate anthers, and was formerly placed at the end of the *Ficoideæ*; *Holachna* was the *Tamarix Songarica* of Pallas.—Saline matter exists in great abundance.

Order 38. *Guttiferæ*. JUSS.

Sepals 2-6, usually persistent, round, frequently unequal, and coloured: estivation imbricated. Petals 4-10. Stamens indefinite, or rarely definite, free, or variously united at the base: filaments unequal: anthers adnate, introrse, or extrorse; sometimes very small, sometimes unilocular, and sometimes opening by a pore. Torus fleshy, occasionally five-lobed. Ovarium solitary, one or many-celled: ovules solitary, erect or ascending; or numerous and attached to central placenta: style none, or very short: stigmas peltate or radiate. Fruit capsular, or fleshy, or drupaceous, one or many-celled, one or many-seeded, valvular and septicide, or indehiscent. Seeds definite, in a pulp, apterous, often arillate: testa thin and membranous. Albumen none. Embryo straight: radicle pointing to (or from?) the hilum: cotyledons usually cohering.—Trees or shrubs, sometimes parasitical: juice resinous. Leaves exstipulate, opposite, or rarely alternate, coriaceous, with a strong midrib, and many oblique lateral parallel veins. Flowers articulated with their peduncle.—Ex. *Clusia*, *Calophyllum*.

In *Calophyllum* the petals seem opposite to the sepals, but in the other genera they are alternate. This order approaches most to the *Hypericineæ*, but differs in several particulars: it is also allied to the following family.—A yellow, viscid, acrid, and purgative gum-resinous juice abounds in all. The powerfully drastic and cathartic gamboge is obtained from *Stalagmitis cambogioides*.

Order 39. *Marcgraaviaceæ*. JUSS.

Sepals 2-7, usually coriaceous and persistent: estivation imbricated. Corolla five-petaled, or sometimes monopetalous, calyptriform, entire, or torn at the point. Stamens indefinite, very rarely only five: filaments free, dilated at the base: anthers long, erect, bursting inwards. Ovarium solitary, unilocular: style one or none: stigma lobed or stellate. Placentæ 4-12, parietal, prominent, and forming spurious dissepiments, more or less complete. Fruit coriaceous, indehiscent, or of several valves, separating from below, loculicide. Seeds indefinite, minute, in a pulp. Albumen 0. Embryo straight: radicle next the hilum.—Shrubs. Leaves alternate, simple, entire, almost sessile, and coriaceous.—Ex. *Marcgravia*, *Norantea*.

Some botanists describe the structure of the fruit differently, by supposing the lamellate placenta to be imperfect, but true dissepiments; and this idea is confirmed by the ovules being only attached to the free extremity of this part. But the above is Professor Richard's hypothesis, and few have examined the tribe with such accuracy.

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By the one view this order is allied to the Flacourtianæ, and by the other to the Guttiferæ, next to which it has been usually placed.—Nothing is known of their properties.

Order 40. *Hippocrateaceæ*. JUSS.

Sepals five (rarely four or six), small, combined in the middle, persistent: estivation imbricated. Petals equal in number to the stamens: estivation imbricated. Stamens three (rarely four or five): filaments united almost to their apex, forming a tube round the ovary. Ovary triangular, trilobular: ovules erect, four in each cell: style one: stigmas 1-3. Placentæ in the axis. Fruit fleshy, 1-3-celled, or of three samaroid carpels. Seeds about four in each cell or carpel. Albumen none. Embryo straight: radicle next the hilum: cotyledons flat, elliptical, oblong, somewhat fleshy, cohering (at least in the dried plant).—Shrubs arborescent or climbing. Leaves opposite, simple, somewhat coriaceous. Flowers small.—Ex. *Hippocrateæ*, *Salacia*.

The ternary number of the stamens, combined with the quinary number of the sepals and petals, form the grand feature of this order. By most botanists it is supposed to be principally allied to the Acerinæ and Malpighiaceæ; but Brown asserts that it is scarcely distinct from Celastriaceæ, notwithstanding the hypogynous stamens.—The fruit of *Tonsella pyriformis* is rich and sweet flavoured; the nuts of *Hippocrateæ comosa* are also eatable.

Order 41. *Erythroxyleæ*. KUNTH.

Sepals five, combined at the base, persistent: estivation imbricated. Petals five, broad, and with a small scale at the base: estivation slightly twisted. Stamens ten: filaments united at the base into a cup: anthers erect, bilocular, longitudinally and laterally dehiscent. Ovary three-celled, of which two are sometimes abortive: ovule one: styles three, distinct or united: stigmas three. Drupe one-seeded. Seed angular, pendulous. Embryo linear, straight, in the axis of a corneous albumen: radicle elongated, next the hilum: cotyledons linear, flat, foliaceous.—Leaves alternate, rarely opposite.—Ex. *Erythroxylon*, *Sethia*.

Closely allied to Malpighiaceæ by the presence of albumen, sessile petals, and general appearance.—A reddish brown dye is prepared from the bark of *Erythr. suberosum*.

Order 42. *Malpighiaceæ*. JUSS.

Sepals five, slightly combined, persistent: estivation imbricated. Petals five, unguiculate, occasionally wanting. Stamens ten (rarely fewer): filaments distinct, or slightly monadelphous: anthers roundish. Torus usually discoid. Ovary one, usually three-lobed, consisting of three carpels, more or less combined: ovules solitary: styles three, distinct or united. Placentæ in the axis. Fruit dry or fleshy, of three distinct carpels or three-celled, occasionally 1-2-celled by abortion. Seeds solitary, pendulous. Albumen 0. Embryo curved or straight: radicle short, next the hilum: cotyledons foliaceous or thickish.—Small trees or shrubs, sometimes climbing. Leaves simple, opposite, or very rarely alternate, not dotted, usually with stipules. Pedicels articulated in the middle.—Ex. *Malpighia*, *Hiptage*, *Banisteria*.

The sepals are often furnished externally with glands at the base, on which account, and the often samaroid fruit, this order seems allied to Acerinæ. In *Aspicarpa* there is but one stamen.—Little is known of their properties. The Barbadoes cherry, the fruit of the *Malpighia glabra*, is used in Jamaica by way of dessert.

Order 43. *Acerinæ*. JUSS.

Calyx 5-, or rarely 4-9-partite: estivation imbricated. Petals equal in number to the lobes of the calyx with which they alternate, rarely wanting. Stamens definite, usually eight, rarely five or twelve: anthers oblong. Torus

discoid. Ovary two-lobed, two-celled: ovules in pairs, attached to the inner angle: style one: stigmas two, subulate. Fruit of two samaroid carpels, of which the membranous appendage has the lower margin incrassated. Seeds solitary or in pairs, erect. Albumen 0. Embryo curved or convolute: radicle next the hilum: cotyledons foliaceous, wrinkled.—Trees. Leaves opposite, simple, lobed, or pinnatisect, without stipules. Flowers often polygamous.—Ex. *Acer*, *Negundo*, *Dobinea*.

Sugar is extracted in abundance from the *Acer saccharinum* and some other species.

Order 44. *Hippocastanææ*. D. C.

Calyx campanulate, five-lobed: estivation imbricated. Petals five or (by abortion) four, distinct, unequal. Stamens 7-8, distinct, unequal: anthers oval, versatile. Torus discoid. Ovary roundish, three-celled: ovules in pairs: style one, filiform, acute. Fruit coriaceous, 1-2-3-celled, 1-2-3-valved, loculicidal. Seeds solitary, large: testa shining or smooth; hilum broad and pale coloured. Albumen 0. Embryo curved, inverted: radicle conical, curved, turned towards the hilum: cotyledons thick, gibbous, fleshy, cohering, hypogæous: plumula large, two-leaved.—Trees or shrubs. Leaves opposite, 5-7-palmate. Pedicels articulated.—Ex. *Æsculus*, *Pavia*.

Richard, with some justice, unites this to the Malpighiaceæ: indeed they agree in almost every important point, except the habit or general appearance.—The seeds abound in starchy matter, which renders them nutritive: they also contain much potash: they are bitter. The bark of *Æsculus hippocastanum* or Horse-chestnut is bitter, astringent, and febrifugal.

Order 45. *Rhizoboleæ*. D. C.

Sepals five, more or less combined: estivation imbricated. Petals five, thickish, unequal. Stamens indefinite, slightly monadelphous, in a double row, of which the inner is often abortive: anthers roundish, bursting longitudinally. Torus discoid. Ovary four-celled: ovules solitary, peritropous: styles 4: stigmas simple. Fruit of four (or by abortion fewer), indehiscent, one-celled, one-seeded nuts, with a thick, double putamen. Seed reniform, with the funiculus dilated into a spongy excrescence: albumen 0. Embryo very large: radicle constituting nearly the whole of the kernel: cauliculus long, two-edged: cotyledons small, foliaceous, lying in a furrow of the radicle.—Trees. Leaves opposite, palmately compound.—Ex. *Caryocar*.

Somewhat allied to *Mangifera* among the Terebinthaceæ, but particularly to Sapindaceæ. To Hippocastanæ it has also some affinity.—The Souari nut, the produce of the *Car. tomentosum*, is well known as the most delicious of the nut tribe: other species yield a nut perhaps almost as good.

Order 46. *Sapindaceæ*. JUSS.

Sepals 4-5, distinct or slightly cohering at the base: estivation imbricated. Petals generally 4-5, occasionally wanting, sometimes naked, sometimes villous or glandular in the middle, or sometimes with a petaloid scale. Stamens twice as many as the petals, distinct, ascending. Torus discoid, plane, lobed. Ovary roundish, trilobular: ovules usually in pairs, one above the other, ascending: styles three, more or less united at the base: stigmas three. Placentæ in the axis. Fruit fleshy, vesicular, or capsular, 3- (or by abortion 1-2-) celled. Seeds solitary, erect, or resupinate. Albumen 0. Embryo: radicle next the hilum: cotyledons more or less curved on the radicle, sometimes straight.—Leaves alternate, having frequently pellucid lines or dots.—Ex. *Sapindus*, *Paullinia*, *Dodonæa*.

Near to Meliaceæ, and also to some of the Terebinthaceæ.—The leaves and branches are poisonous, but the fruit is eatable, and, of several, is used in desserts. The

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Litchi, Longan, and Rambutan, are from the genus *Euphorbia*. The fruit of the soap-berry, *Sapindus saponaria*, is saponaceous.

Order 47. *Meliaceæ*. JUSS.

Suborder 1. *Meliæ*. Sepals 4-5, more or less united: estivation imbricated. Petals 4-5, conniving or cohering at the base: estivation valvate. Stamens as many as the petals, or two, three, or four times as many: filaments cohering in a long tube: anthers sessile within the orifice of the tube. Torus sometimes large and cup-shaped. Ovarium single, plurilocular: ovules suspended, solitary, or in pairs: style one: stigmas free or combined. Fruit baccate, drupaceous, or capsular, many- (or by abortion one-) celled; valves when present loculicidal. Seeds apterous. Albumen 0. Embryo straight, inverted: radicle next the hilum.—Leaves alternate or stipulate.—Ex. *Melia*, *Trichilia*.

Suborder 2. *Humiriaceæ*. AD. JUSS. Calyx five-cleft: estivation imbricated. Petals five, alternate with the sepals: estivation imbricated. Stamens five times as many as the petals: filaments combined into a tube: anthers two-celled, with a fleshy connectivum extended beyond the lobes. Torus annular or toothed. Ovarium five-celled: ovules suspended, solitary, or in pairs: style simple: stigma lobed. Fruit drupaceous, five- (or by abortion fewer) celled. Seed with a membranous integument. Embryo straight, oblong, lying in a fleshy albumen: radicle next the hilum.—Leaves alternate, exstipulate: petiole winged.—Ex. *Humiria*.

Suborder 3. *Cedreleæ*. R. BROWN. Calyx five-cleft, persistent: estivation imbricated. Petals five, sessile: estivation imbricated. Stamens ten, combined below into a tube: anthers somewhat sessile, acuminate, bilocular, bursting longitudinally. Torus cup-shaped, ten-plaited. Ovarium five-celled, each cell semibilocular by the inflexion of the placenta: style simple: stigma peltate, five-lobed. Capsule of five valves, septifragal; dissepiments obliterated, except at the base. Placenta laminary, inflected, finally becoming loose, and having two or more seeds on each side. Seeds erect or suspended, winged at one extremity: testa coriaceous. Albumen fleshy, thin, or wanting. Embryo straight, transverse: radicle very small, distant from the hilum: cotyledons flat, very large.—Leaves alternate, exstipulate.—Ex. *Swietenia*, *Cedrela*.

We again unite these three orders, because we do not find any good marks between them. The albuminous seeds and slender embryo chiefly distinguish *Humiriæ* from *Meliæ*; but in *Cedreleæ* the seeds have albumen and want it, and in this tribe the dehiscence of the capsule is not so constant as one would wish; for in *Chloroxylon* (or *Swietenia chloroxylon*) the fruit is loculicidal. The seeds of all, we believe, are anatropous.—The medical properties of this family are little understood; and to judge by those that are known, they are very dissimilar. Thus the bark of *Canella alba* (or false Winter's bark) is aromatic and stimulant; that of *Melia* is nauseous; and of *Swietenia febrifuga*, bitter and febrifuge. The fruits of some few are eatable, and delicious. Mahogany is the wood of *Swietenia Mahogoni*.

Order 48. *Ampelideæ*. RICH.

Calyx small, nearly entire. Petals 4-5, sometimes cohering above, and calyptriform: estivation valvate. Stamens 4-5, opposite to the petals: filaments distinct, or slightly cohering at the base: anthers ovate, versatile. Torus an annular disc, bearing the petals on its exterior, and the stamens on its surface. Ovarium two-celled: ovules in pairs, erect: style one, very short: stigma simple. Berry globose, pulpy, two- (or often by abortion, one-) celled. Seeds 1-4, erect: testa osseous. Albumen horny. Embryo erect: radicle slender: cotyledons lanceolate.—

Climbing shrubs. Leaves, lower ones opposite, upper alternate, with racemes opposite to them, which are sometimes abortive, and change into tendrils.—Ex. *Cissus*, *Vitis*.

This order approaches closely to the *Meliaceæ*; indeed it is difficult to say to which *Leea* ought to be referred, or if it ought not to form a small connecting group. If in that genus we consider the torus to be cup-shaped, bearing the petals on its outside about the middle, we shall have above the insertion of the petals five sessile, adnate, extrorse, anthers; by which view we should have a true member of the *Ampelideæ*: but then the anthers are alternate with the petals, and the plants are not climbing: from *Meliaceæ* it differs rather more. As to *Lasianthera*, too little is known of it to decide upon its affinities.—The vine is so well known that we need not detail its properties.

Order 49. *Geraniaceæ*. JUSS.

Suborder 1. *Geraniæ*. ST HIL. Sepals five, persistent, more or less unequal, or sometimes spurred at the base: estivation imbricated. Petals five (or, by abortion, 4, rarely 0), unguiculate: estivation twisted. Stamens monadelphous, twice or thrice as many as the petals (some occasionally abortive). Ovarium of five carpels, placed round an elongated axis: ovules pendulous, solitary: styles five, cohering round the axis. Fruit cohering round the axis; of five pieces, with a membranous, indehiscent pericarp and indurated style, which finally twists and carries the pericarp along with it. Seed solitary, erect: chalaza close to the hilum. Albumen 0. Embryo curved: radicle at the opposite extremity from the hilum, but pointing towards it: cotyledons next the hilum, foliaceous, convolute, and plaited.—Leaves simple, stipulate, opposite, or alternate, with peduncles opposite to them.—Ex. *Geranium*.

Suborder 2. *Lineæ*. D. C. Sepals 3-4-5, persistent: estivation imbricated. Petals 3-4-5, unguiculate, fugitive: estivation twisted. Stamens as many as the petals, and alternate with them (with intermediate teeth or abortive stamens), arising from an annular torus: anthers ovate, erect. Ovarium with as many (rarely fewer) cells and styles as stamens: stigmas capitate. Capsule generally pointed with the hardened base of the styles, plurilocular: each cell spuriously bilocular, and opening by two valves at the apex. Seeds solitary in each spurious cell, compressed, pendulous. Albumen thin, fleshy. Embryo straight: radicle next the hilum: cotyledons flat.—Leaves entire, alternate, without stipules, sometimes with two glands at the base. Flowers terminal.—Ex. *Linum*.

Suborder 3. *Balsamineæ*. RICH. Sepals five, irregular, deciduous, the two inner and upper connate, the lower spurred: estivation imbricate. Petals four (five, but the fifth abortive), united by pairs. Stamens five: filaments subulate: anthers two-celled, bursting longitudinally. Ovarium solitary, five-celled: ovules numerous: stigma sessile, more or less five-lobed. Fruit capsular, five-celled, five-valved, elastically septifragal. Seeds numerous, suspended. Albumen 0. Embryo straight: radicle next the hilum: cotyledons plano-convex.—Succulent herbaceous plants. Leaves simple, opposite or alternate, exstipulate. Flowers axillary.—Ex. *Impatiens*.

Suborder 4. *Hydrocereæ*. BLUME. Sepals five, deciduous, coloured, unequal, the lowermost spurred: estivation imbricated. Petals five, unequal; the upper arched. Stamens five: filaments connate at the apex: anthers slightly connate, bilocular, bursting at the apex. Ovarium five-celled: ovules pendulous, 2-3 in each cell: stigmas five, sessile, acute. Fruit succulent, five-celled; endocarp hard and osseous. Seeds solitary. Albumen 0. Embryo: radicle next the hilum: cotyledons plano-convex.

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—Herbaceous, with angular stems. Leaves alternate, exstipulate.—Ex. *Hydrocera*.

Suborder 5. *Tropæoleæ*. Juss. Sepals five, the upper spurred: estivation imbricate, or rarely valvate. Petals five, unequal, irregular, the two upper sessile, the three lower stalked, or sometimes abortive. Stamens eight, free: anthers erect, bilocular. Torus discoid, almost united with the calyx. Ovary one, triquetrous, of three carpels: ovules solitary, pendulous: style one: stigmas three, acute. Fruit indehiscent, separable from the axis into three pieces (or, by abortion, of one piece). Albumen 0. Embryo large: radicle next the hilum, lying within the projections of the cotyledons, which are straight, thick, and consolidated into one body.—Herbaceous trailing or twining plants. Leaves alternate, exstipulate. Flowers axillary.—Ex. *Tropæolum*.

Suborder 6. *Oxalideæ*. D. C. Sepals five, equal, sometimes slightly cohering at the base, persistent: estivation imbricate. Petals five, equal, unguiculate: estivation twisted. Stamens ten, more or less monadelphous; those opposite the petals longer than the others: anthers erect, bilocular. Ovary five-angled, five-celled: styles five, filiform: stigmas capitate, or slightly bifid. Placentæ in the axis. Capsules membranous, five-celled, 5-10-valved. Seeds several: testa fleshy, bursting elastically. Albumen between cartilaginous and fleshy. Embryo straight, as long as the albumen: radicle long, next the hilum: cotyledons foliaceous.—Leaves compound (or by abortion simple), alternate, seldom opposite or whorled.—Ex. *Oxalis*, *Averrhoa*.

All these suborders may be either considered as parts of one order, or as orders belonging to one class. They are allied on the one hand to Caryophyllæ and Malvææ, and on the other to Rutææ. *Rhynchotheca* has no petals, but certainly belongs to the Geraniææ, although it be difficult to say with which of the above sections it ought to be ranked: the seeds pendulous, albumen fleshy, embryo straight, stamens distinct, and two ovules in each cell, militate against it being placed in Geraniææ; and the cohering styles separate it from Linææ and Oxalideæ. In *Tropæoleæ* the stamens may almost be called perigynous.—Geraniææ possess an astringent principle, and an aromatic and resinous flavour. The mucilaginous diuretic seeds of Linææ, and the purgative leaves of *L. catharticum*, are well known. The fleshy fruit of *Tropæoleæ* is acrid, and used as a cress. The Oxalideæ are acid, and supply the place of sorrel. The leaves of *Ox. acetosella* contain pure oxalic acid.

Order 50. *Pittosporææ*. R. BROWN.

Sepals five, deciduous, distinct, or partially cohering: estivation imbricate. Petals five, sometimes slightly cohering: estivation imbricate. Stamens five, distinct, alternate with the petals. Ovary solitary, 1-2-5-celled: style one: stigmas 2-5, equal in number to the placentas. Fruit capsular or baccate, cells polyspermous, sometimes incomplete, loculicidal. Seeds often covered with a glutinous or resinous pulp. Embryo minute, contained in a fleshy albumen near the hilum: radicle long: cotyledons very short.—Leaves simple, alternate, exstipulate. Flowers sometimes polygamous.—Ex. *Pittosporum*, *Billardiera*.

De Candolle arranges this next Polygalææ, probably on account of the tendency of the fruit to become unilocular, with parietal placentæ. We, however, agree with Richard, that its place ought to be at no great distance from the Rutææ.—The berries of *Billardiera* are eatable, but nothing further is known of the properties of the order.

Order 51. *Brexiaceæ*. LINDL.

Sepals five, small, persistent, cohering at the base: estivation imbricate. Petals five: estivation imbricate. Stamens five, alternate with the petals, arising from a

narrow cup, which is toothed between each stamen: anthers introrse, two-celled, opening longitudinally. Ovary five-celled: ovules numerous: placentæ in the axis: style one: stigma simple. Fruit a five-celled drupe. Seeds indefinite: testa and tegmen distinct. Albumen 0. Embryo straight: radicle cylindrical, pointing to the hilum: cotyledons ovate, obtuse.—Trees. Leaves coriaceous, alternate, with small deciduous stipules.—Ex. *Brexia*.

The solitary genus of this order appears to be the same with the *Venana* of Lamarck, which name ought perhaps to be adopted. Du Petit Thouars describes a fleshy albumen.

Order 52. *Rutaceæ*. Juss.

Suborder 1. *Zygophyllææ*. R. BROWN. Flowers bisexual, regular. Calyx 4-5-divided: estivation convolute. Petals alternate with the sepals: estivation usually convolute. Stamens twice as many as the petals: filaments distinct, dilated at the base, and usually arising from scales. Ovary simple, 4-5-celled: ovules in pairs or more, pendulous, or rarely erect: style simple, 4-5-furrowed: stigma simple, or 4-5-lobed. Fruit capsular, or rarely fleshy, with 4-5 angles or wings, 4-5-valved and loculicidal, or indehiscent: endocarp and sarcocarp combined. Seeds usually fewer than the ovules. Albumen between fleshy and horny, rarely 0. Embryo green: radicle superior: cotyledons foliaceous.—Leaves opposite, stipulate, not dotted, rarely simple.—Ex. *Zygophyllum*, *Tribulus*.

Suborder 2. *Rutææ*. Juss. Flowers bisexual, regular. Calyx 4-5-divided: estivation imbricate. Petals alternate with the sepals: estivation between twisted and convolute. Stamens twice or thrice as many as the petals. Torus sometimes discoid. Ovary 3-5-lobed, 3-5-celled: ovules in each cell two, or 4-20, pendulous or adnate to the placentæ: styles several, combined upwards: stigma 3-5-angled, or furrowed. Capsule either three-valved and loculicidal, or 4-5-lobed, opening internally at the apex: sarcocarp and endocarp combined. Seeds often fewer than the ovules. Embryo lying within the fleshy albumen: radicle superior: cotyledons flat.—Leaves (with one exception), exstipulate, alternate, usually with pellucid dots.—Ex. *Ruta*, *Peganum*.

Suborder 3. *Diosmeæ*. R. BROWN. Flowers bisexual. Calyx 4-5-divided: estivation imbricate. Petals (rarely wanting), as many as the sepals, distinct, or combined below into a spurious monopetalous corolla: estivation twisted-convolute, or rarely valvate. Stamens as many, or twice as many, as the petals (or fewer by abortion), hypogynous, or rarely perigynous. Torus discoid or urceolate, surrounding the base of the pistillum, free or attached to the calyx, often wanting. Ovaria as many or fewer than the petals, syncarpous, or more or less apocarpous: ovules two, rarely four or one in each, peritropal: styles combined above: stigma simple or dilated. Fruit of 1-5 capsules, cohering, or somewhat distinct: endocarp two-valved, dehiscing at the base, separating from the two-valved sarcocarp. Seeds solitary or in pairs. Albumen 0. Radicle superior.—Leaves exstipulate, opposite or alternate, covered with resinous dots.—Ex. *Dictamnus*, *Diosma*, *Correa*, *Erodia*, *Monniera*.

Suborder 4. *Zanthoxyleææ*. AD. JUSS. Flowers unisexual, regular. Calyx 3-4-5-divided: estivation imbricate. Petals equal in number (rarely none) to the sepals: estivation usually twisted-convolute. Stamens as many, or twice as many, as the petals. Ovaria as many (or fewer) as petals, syncarpous, or partially apocarpous. Ovules, in each two, or rarely four: styles more or less combined. Fruit either baccate or membranous, sometimes of 2-5 cells, sometimes of several drupes or two-

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valved capsules, of which the fleshy sarcocarp is partly separable from the endocarp. Seeds solitary or in pairs, pendulous. Embryo lying within a fleshy albumen: radicle superior: cotyledons ovate, flat.—Leaves exstipulate, alternate or opposite, with pellucid dots.—Ex. *Zanthoxylon*, *Brucea*, *Ptelea*.

Suborder 5. *Simaroubeæ*. RICH. Flowers usually bisexual. Calyx 4-5-divided: estivation imbricated. Petals as many as the sepals, spreading, or connivent into a kind of tube: estivation twisted. Stamens twice as numerous: filaments arising from scales: anthers bursting longitudinally. Ovarium stipitate, 4-5-lobed, 4-5-celled: ovules solitary: style simple: stigma 4-5-lobed. Fruit of 4-5 indehiscent drupes arranged round a common receptacle. Seeds pendulous: testa membranous. Albumen none. Radicle superior, short, drawn back within the thick cotyledons.—Leaves alternate, exstipulate, without dots.—Ex. *Quassia*, *Simarouba*.

These five may, if one please, be viewed as orders belonging to one class. The last of them is the most distinct, and is closely allied to the *Ochnaceæ*. Some few *Diosmeæ* have the stamens perigynous, but the great passage to the *Peripetalæ* is through the *Zanthoxylæ*, many of which are very closely allied to the *Terebinthaceæ*.—Of the *Zygo-phylleæ* some are anthelmintic; others are acrid and bitter, and are employed as sudorifics, diaphoretics, or alteratives. Of the *Ruteæ* the common rue is sudorific, anthelmintic, and emmenagogue. The *Diosmeæ* of the Cape are considered antispasmodics; of America, febrifuge: and the root of *Dictamnus* was formerly used as a sudorific and vermifuge. Almost all the *Zanthoxylæ* are aromatic and pungent; some are powerful sudorifics and diaphoretics; of others the bark is bitter. *Brucea* contains a poisonous principle called *Brucia*. The *Simaroubeæ* are all intensely bitter.

Order 53. *Ochnaceæ*. D. C.

Sepals five, persistent: estivation imbricated. Petals equal to or rarely twice as many as the sepals, deciduous, spreading: estivation imbricated. Stamens five, alternate with the petals, or ten, or indefinite: filaments persistent: anthers two-celled, erect, opening by pores. Torus discoid. Carpels as many as petals, seated upon an enlarged tumid gynobase: ovules erect: styles combined into one. Fruit (a sarcobase) of several indehiscent drupaceous carpella, articulated with the gynobase. Seeds solitary. Albumen none. Embryo straight: radicle short, inferior: cotyledons thick.—Leaves alternate, simple, stipulate. Petioles articulated in the middle.—Ex. *Ochna*, *Gomphia*.

Very closely allied to the *Rutaceæ*, but differing by the erect ovule, and the anthers opening by pores. *Walkera* is usually referred here, although the ovules be pendulous and the radicle superior; but perhaps in this order more attention must be paid to the spermic direction of the embryo; for in *Ochnaceæ* and *Walkera*, as well as in *Rutaceæ*, the radicle points to the hilum.—The root and leaves of *Walkera serrata* are bitter, and a decoction tonic, stomachic, and anti-emetic.

Order 54. *Coriariææ*. D. C.

Calyx campanulate, five-parted: estivation imbricate. Petals five, alternate with the lobes of the calyx, very small, fleshy, carinate internally. Stamens ten (in the female flowers barren): filaments filiform, distinct: anthers oblong, two-celled. Ovarium seated on a thickened torus, five-angled, five-celled: ovules solitary, pendulous: style none: stigmas five, opposite the segments of the calyx, long, filiform, glandular. Fruit (in the male flowers abortive) a crustaceous pentachenium, surrounded by the enlarged fleshy petals. Seeds pendulous. Albumen none. Embryo slightly curved: radicle superior: cotyledons

plano-convex.—Shrubs with square branches. Leaves opposite, simple, three-nerved. Buds scaly. Flowers racemose, unisexual: the males with abortive pistilla, the females with abortive stamens.—Ex. *Coriaria*.

Jussieu has pointed out the affinity of this tribe with the *Malpighiaceæ*: with *Rhamneæ* it is also allied; but we think it would be no difficult matter to demonstrate its close relation to *Euphorbiaceæ*. The petals are in a very reduced state, and scarcely differ from what we find in several *Euphorbiaceæ*.—The fruit of *Coriaria myrtifolia* is poisonous.

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Div. II.—*Dichlamydeæ Calycifloræ*. D. C.

(2. *Peripetalæ*. Juss.)

2. *Peripetalæ*.

Order 55. *Stackhousiææ*. R. BROWN.

Calyx five-cleft, equal, with an inflated tube. Petals five, equal, inserted at the top of the tube of the calyx, unguiculate: claws combined into a tube: limb narrow, spreading. Stamens five, unequal, arising from the throat of the calyx. Ovarium superior, 3-5-lobed; lobes distinct: ovules solitary, erect: styles 3-5, sometimes united at the base: stigmas simple. Fruit of 3-5, indehiscent, winged or apterous pieces, attached to a central persistent column. Embryo erect in the axis of, and about as long as, the fleshy albumen.—Leaves simple, entire, alternate, with lateral minute stipules.—Ex. *Stackhousia*.

Related to the *Celastrineæ*, and also to the *Euphorbiaceæ*; on which last account we have placed it after *Coriariææ*.

Order 56. *Celastrineæ*. R. BROWN.

Suborder 1. *Euonymææ*. D. C. Sepals 4-5: estivation imbricated. Petals 4-5 (rarely none), with a broad base: estivation imbricated. Stamens alternate with the petals: anthers erect. Torus large, expanded, flat. Ovarium superior, immersed in the torus and adhering to it, 3-4-celled: ovules one or many in each cell, attached by a short funiculus to the axis, ascending. Fruit superior, a capsule 3-4-celled, 3-4-valved and loculicidal, or a dry drupe with a 1-2-celled nut. Seeds one or many in each cell, ascending or resupinate, sometimes arillate. Albumen fleshy. Embryo straight: radicle short, inferior: cotyledons flat and thick.—Shrubs. Leaves simple, alternate, or opposite. Ex. *Euonymus*, *Celastrus*.

Suborder 2. *Staphyleææ*. D. C. Sepals five, connected at the base, coloured: estivation imbricated. Petals five, alternate: estivation imbricated. Stamens five, alternate with the petals. Torus a large urceolate disc. Ovarium 2-3-celled, superior: ovules erect: styles 2-3, cohering at the base. Fruit membranous or fleshy, indehiscent, or opening internally, partly abortive. Seeds ascending, roundish, truncate at the hilum: testa bony: hilum large, truncate. Albumen none. Embryo straight: radicle small, inferior: cotyledons thick.—Shrubs. Leaves opposite, pinnate, with common and partial stipules.—Ex. *Staphylea*, *Turpinia*.

Allied to *Hippocrateaceæ*, to *Euphorbiaceæ*, and to *Rhamneæ*. *Ilicineæ* has been now removed from this to the *Hypocorollææ* near to *Ebenaceæ*.—Their medical properties are unknown. The young shoots of *Euonymus Europæus*, termed bois carré, when charred, are used as pencils in some kinds of drawings.

Order 57. *Rhamneææ*. Juss.

Calyx 4-5-cleft: estivation valvate. Petals distinct, cucullate, or convolute, inserted into the throat of the calyx, sometimes wanting. Stamens definite, opposite the petals. Torus a large, flat, or urceolate disc. Ovarium superior or half superior, 2-3-4-celled: ovules solitary, erect. Fruit fleshy, indehiscent, or dry, and separating in three parts. Seeds erect. Albumen fleshy, rarely none. Embryo about as long as the seed: radicle short,

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inferior: cotyledons large, flat.—Trees or shrubs often thorny. Leaves simple, alternate (or rarely opposite), minutely stipulate.—Ex. *Rhamnus*, *Phytica*.

Allied to Celestrineæ, to Euphorbiaceæ, to Rosaceæ, and to Byttneriaceæ. The berries of several species of *Rhamnus* are violent purgatives. The fruit of *Zizyphus*, however, is destitute of these qualities, and is both wholesome and pleasant to eat: the Jujube is a species of this genus, as also the Lotus of the classics.

Τὸν δ' ἴσθις λωτοῖο φαγοὶ μελινθεῖα καρπὸν,
οὐκ ἐπ' ἀπαγγίλαι παλιν ἠέλειν, οὐδὲ νεσθῆαι.
ἀλλ' αὐτοῦ βουλόντο μετ' ἀνδράσι λωτοφαγοῖσιν
λωτὸν ἐρεπτομένοι μιν μιν, νοστοῦ τι λαβεῖσθαι.¹

Order 58. *Terebinthaceæ*. JUSS.

Suborder 1. *Anacardiaceæ*. R. BR. Flowers usually unisexual. Calyx usually small, persistent, 5- (sometimes 3-4-7-) divided. Petals equal in number to the sepals (sometimes wanting), perigynous: estivation imbricate. Stamens equal in number to the petals, and alternate, or twice as many or more: filaments distinct or cohering at the base, perigynous (or very rarely hypogynous.) Torus fleshy, annular, or cup-shaped, or inconspicuous. Ovary single (or rarely 5-6), free or rarely adhering to the calyx, 1-celled: ovulum solitary, attached by the funiculus to the base or side of the cell: styles one or three, occasionally four: stigmas as many. Fruit indehiscent, usually drupaceous. Seed ascending, or more frequently pendulous. Albumen none. Radicle superior or inferior, next the hilum (very rarely at the opposite extremity), sometimes curved suddenly back: cotyledons thick and fleshy, or leafy.—Trees or shrubs: juice resinous, gummy, caustic, or milky. Leaves alternate, not dotted.—Ex. *Anacardium* (Plate CXIII.), *Mangifera*, *Rhus*.

Suborder 2. *Spondiaceæ*. KUNTH. Flowers sometimes unisexual. Calyx 5-cleft, regular. Petals 5: estivation between valvate and imbricate. Stamens ten, perigynous. Torus large, discoid, or annular. Ovary superior, sessile, 2-5-celled: ovules solitary, ascending or pendulous: styles five, short: stigmas obtuse. Fruit drupaceous, 2-5-celled. Seed solitary. Albumen none. Radicle pointing to the hilum: cotyledons plano-convex.—Trees. Leaves imparipinnate, alternate, not dotted, exstipulate.—Ex. *Spondias*.

Suborder 3. *Burseraceæ*. KUNTH. Flowers usually bisexual. Calyx persistent, somewhat regular, 2-5-divided. Petals 3-5: estivation usually valvate. Stamens two or four times as many as petals, perigynous. Torus orbicular or annular. Ovary 2-5-celled, superior, sessile: ovules in pairs, collateral, suspended: style one or none: stigma simple or lobed. Fruit drupaceous, 2-5-celled, its outer portion often splitting into valves. Seed solitary. Albumen none. Radicle straight, superior, next the hilum: cotyledons fleshy, or wrinkled and plaited.—Trees or shrubs abounding in balsam, gum, or resin. Leaves alternate, usually not dotted, generally with stipules.—Ex. *Bursera*, *Ikica*.

Suborder 4. *Amyrideæ*. KUNTH. Calyx small, regular, persistent, four-divided. Petals four, inserted at the base of the calyx (hypogynous, KUNTH), equal, narrow at the base: estivation imbricate. Stamens twice as many as the petals, and inserted with them, distinct. Torus thin, discoid, covering the base of the calyx. Ovary superior, sessile, one-celled: ovules two, pendulous: stigma sessile, capitate. Fruit somewhat drupaceous, indehiscent, glandular. Seed one. Albumen none. Radicle superior, next the hilum, very short: cotyledons fleshy.—Resinous trees or shrubs. Leaves opposite, compound, dotted.—Ex. *Amyris*.

We look on these suborders as parts of one order, and ge-

nera occur which show their affinity. Thus the old genus *Amyris* is now split, and placed in the first, third, and fourth of the above. *Poupartia* lies doubtfully between the second and third. *Sorindeja* is placed by Kunth in the first, by Brown and De Candolle in the third; while *Spondias Mangifera*, which probably does not differ, is in the second. As a whole, this order has the seed anatropous: to this there is perhaps one exception in *Schinus*, where Kunth describes the ovule suspended, and the radicle inferior; but this, from its great resemblance to *Durava*, requires to be re-examined. If in *Amyrideæ* the stamens be truly hypogynous, they may be perhaps removed to the vicinity of the *Aurantiaceæ*.—The *Anacardiaceæ* have an acrid, highly poisonous juice. The varnish of Sylhet, and of Martaban, are obtained from species belonging to them. These varnishes are at first white, but afterwards become black, and are dangerous to some constitutions. Mastich is the produce of species of *Pistacia*. The fruit of some kinds, as the Mango, the Cashew-nut, and the *Pistacia*-nut, are eaten. The fruit of some species of *Spondiaceæ*, called Hog-plums, are eatable. *Burseraceæ* have a fragrant juice, that is neither acrid nor staining. Several balsams are obtained from them. The *Amyrideæ* also produce balsams, but the *Am. toxicaria* is said to be poisonous.

Order 59. *Connaraceæ*. R. BROWN.

Flowers bi- (rarely uni-) sexual. Calyx 5-partite, regular, persistent: estivation imbricate or valvular. Petals 5, equal, inserted at the base of the calyx. Stamens twice as many as the petals, inserted with the petals, or somewhat hypogynous: filaments usually arising from a glandular or annular torus (formed by the union of their glandular bases). Ovary apocarpous, solitary, or several: ovules in pairs, collateral, ascending: styles terminal: stigmas obtuse, usually dilated. Capsules 1-5, dehiscing longitudinally at the ventral suture. Seeds solitary, erect, sometimes with an arillus. Albumen none, or fleshy. Radicle superior, at the opposite extremity from the hilum: cotyledons thick when there is no albumen, foliaceous in those with it.—Trees or shrubs, without resinous juices. Leaves compound, alternate, not dotted, exstipulate.—Ex. *Connarus*, *Omphalobium*, *Cnestis*.

This order seems to form the passage from the *Terebinthaceæ* to the *Leguminosæ*: to the last it is so closely allied as scarcely to be sometimes distinguishable from it, except by the radicle being at the opposite end from the hilum. When there is but one capsule, as in *Connarus* (to which may be united the first section of *Omphalobium* of De Candolle), it is opposite the anterior segment of the calyx, as in *Leguminosæ*: when several, as in *Cnestis*, they alternate. Brown thinks the insertion ought to be described as hypogynous.

Order 60. *Leguminosæ*. JUSS.

Calyx five-parted, or toothed, or cleft, with the odd segment anterior: segments often unequal and variously combined. Petals five (or, by abortion, four, three, two, one, or wanting), inserted into the base of the calyx, usually unequal, sometimes variously combined; the odd petal superior. Stamens definite or indefinite, inserted with the petals or sometimes hypogynous, distinct, or monadelphous, or diadelphous, or rarely triadelphous: anthers bilocular, versatile. Ovary superior, one-celled, solitary (or very rarely 2-5): ovules one or many: style simple, proceeding from the upper or ventral suture: stigma simple. Fruit a legume or drupe. Seeds solitary or several, sometimes with an arillus. Albumen none. Embryo straight, or with the radicle bent upon the edge of the cotyledons.—

¹ Homer's *Odyssey*, ix. line 94.

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Leaves alternate, with usually two stipules at the base of the petiole, and two at the base of each leaflet in the pinnate leaves. Pedicels usually articulated.—Ex. *Pisum*, *Citrus*, *Mimosa*, *Swartzia*, *Cassia*.

This order touches upon many others, but it is particularly allied to the almond tribe among the Rosaceæ, from which, till lately that Mr Brown pointed it out in the relative positions of the calyx and pistillum, no good character had been discovered to separate them.—This family is among the most important to man, whether as affording objects of beauty, of utility, or of nutriment. The bean, the pea, the vetch, and the clover tribe belong to it; as do the logwood, the laburnum, indigo, the tamarind, senna, and the acacias. Its general property is to be wholesome; but there are several exceptions. Thus, the seeds of *Laburnum* and the juice of *Coronilla varia* are poisonous. Senna, obtained from several species of *Cassia*, is purgative; several other plants are also purgative. The pericarp of some contains much tannin. Several kinds of gums and balsams are got from them. But it would consume pages to enumerate all the uses to which this, one of the most extensive orders in the vegetable kingdom, has been applied.

Order 61. *Moringææ*. R. BROWN.

Calyx five-partite: estivation slightly imbricated. Petals five, nearly equal, the upper one ascending. Stamens ten, perigynous: filaments slightly petaloid, callous, and hairy at the base: anthers simple, one-celled, with a thick convex connectivum. Torus fleshy, lining the tube of the calyx. Ovarium superior, stipitate, one-celled: style filiform, terminal, not obliquely inserted, stigma simple. Placentæ three, parietal. Fruit a pod-like capsule, one-celled, three-valved, loculicide. Seeds numerous, half-buried in the fungous substance of the valves. Albumen none. Radicle straight, small: cotyledons fleshy, plano-convex.—Leaves twice or thrice pinnate, with an odd leaflet.—Ex. *Moringa*.

Formerly considered as part of Leguminosæ, but now separated by Mr Brown. It seems, however, to have more affinity with these than with any others; nor do we see in the fruit very grave objections for such a supposition, as the flowers of *Gleditschia* have occasionally two carpels united in the same manner as the three of *Moringa*. The root of *Moringa pterigosperma*, or horse-radish tree, has a warm, biting, and slightly aromatic taste, and is used as a stimulant in paralytic affections and intermittent fevers.

Order 62. *Rosaceæ*. JUSS.

Suborder 1. *Chrysobalanææ*. R. BROWN. Calyx five-lobed, the fifth lobe superior, sometimes bracteolate at the base. Petals five, or wanting, more or less irregular. Stamens definite or indefinite, usually irregular. Ovarium superior, solitary, 1-2-celled, stipitate, the stalk cohering more or less on one side with the calyx: ovules in pairs, erect: style single, arising from the base of the ovary: stigma simple. Drupe 1-2-celled. Seeds usually solitary, erect. Albumen none, or rarely fleshy. Radicle inferior: cotyledons fleshy.—Trees or shrubs. Leaves simple, alternate, stipulate, without glands.—Ex. *Chrysobalanus*, *Hirtella*.

Suborder 2. *Amygdalææ*. JUSS. Calyx five-toothed, the odd lobe superior. Petals five. Stamens about twenty, in estivation curved inwards: anthers erect, two-celled. Torus lining the tube of the calyx. Ovarium superior, solitary, simple, one-celled: ovules two, suspended: styles terminal, with a groove on each side: stigma reniform. Fruit a drupe. Seeds usually solitary, suspended from the funiculus, which arises from the base of the cavity, but coheres with its side. Albumen none. Embryo straight: radicle next the hilum: cotyledons thick.—Trees or shrubs. Leaves simple, alternate, stipulate.—Ex. *Prunus*, *Amygdalus*.

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Suborder 3. *Neillieæ*. Calyx campanulate, five-cleft, the odd segment superior. Petals five, sessile. Stamens indefinite, unequal: filaments smooth: anthers erect, bilocular, dehiscing on the outside longitudinally. Torus lining the tube of the calyx. Ovarium superior, simple, one-celled: ovules several, ascending: style round, terminal, persistent: stigma simple, obtuse. Capsule one-celled, dehiscing at the inner or ventral suture. Seeds several. Albumen copious, fleshy. Embryo in the axis of the albumen: radicle next the hilum, thick, short: cotyledons plano-convex.—Shrubs. Leaves simple, alternate, stipulate.—Ex. *Neillia*.

Suborder 4. *Spirææ*. JUSS. Calyx 4-5-lobed, fifth lobe superior: estivation imbricated. Petals five, equal. Stamens indefinite, in estivation curved inwards: anthers erect, two-celled, bursting longitudinally. Torus thin or fleshy, lining the whole tube of the calyx, or free in its upper part. Ovaria superior, one or several, apocarpous, or rarely cohering: ovules 1-6 in each carpel, suspended: styles lateral, but near the apex: stigmas simple, emarginate. Fruit usually of distinct follicles, very rarely capsular. Seeds 1-6, apterous, or rarely winged. Albumen none. Embryo straight: radicle next the hilum: cotyledons flat.—Leaves alternate, stipulate, or rarely without stipules, simple, or rarely trifoliate.—Ex. *Spiræa*, *Gillenia*.

Suborder 5. *Quillajææ*. DON. Calyx five-cleft: estivation valvate. Petals five, alternate with the segments of the calyx, sometimes wanting. Stamens two or three times as many as the segments of the calyx, perigynous: anthers two-celled. Ovaria five, connate at the base, one-celled: ovules indefinite, ascending: styles five: stigmas five, lateral, papillose. Fruit of five follicles, connate at their base. Seeds numerous, ascending, winged at the apex. Albumen none. Embryo straight: radicle cylindrical, next the hilum: cotyledons foliaceous, convolute, longer than the radicle.—Trees. Leaves alternate, entire. Stipules minute, caducous. Flowers unisexual.—Ex. *Quillaja*, *Kageneckia*.

Suborder 6. *Sanguisorbææ*. JUSS. Calyx 3-4-5-lobed, with a thickened, afterwards indurated, tube: estivation valvate. Petals none. Stamens definite, alternating with the segments of the calyx (though sometimes fewer than them by abortion), rarely indefinite: anthers erect, two-celled and bursting longitudinally, or one-celled and bursting transversely. Torus lining the tube of the calyx. Ovarium 1-4, with a lateral style proceeding from the apex or base: ovule solitary, attached to the ovarium, close to the base of the style: stigma simple, penicilliform, or bearded, or rarely capitate. Nuts 1-4. Seed solitary, suspended, or ascending. Albumen none. Radicle superior: cotyledons large, plano-convex.—Leaves alternate, stipulate, simple, lobed, or compound. Flowers often unisexual.—Ex. *Sanguisorba*, *Acana*.

Suborder 7. *Potentillææ*. JUSS. Calyx 4-5- (or more-) divided: estivation valvate. Petals as many as the lobes of the calyx, and alternating. Stamens indefinite, sometimes 10-15-20, rarely five, and then alternate with the petals: anthers bilocular. Torus lining the tube of the calyx, sometimes becoming very fleshy: ovaria distinct, indefinite, or rarely definite (2-5): ovules suspended, erect, or ascending, solitary, or rarely in pairs, one above the other: style lateral, attached near the apex: stigma simple or plumose. Fruit of small nuts or achenia. Seeds solitary. Albumen none. Embryo straight: radicle next the hilum: cotyledons flat.—Leaves alternate, often compound, stipulate.—Ex. *Potentilla*, *Dryas*, *Fragaria*.

Suborder 8. *Rosææ*. JUSS. Calyx five-divided, segments often pinnatisect; tube contracted at the mouth, at length fleshy: estivation spirally imbricated. Petals five. Stamens indefinite: anthers two-celled. Torus

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thick, lining the tube of the calyx, bearing at its margin the stamens and petals, and on its surface the carpels. Ovaries superior, indefinite, concealed within the tube of the calyx: ovules in pairs, one above the other, suspended: styles persistent, lateral, attached near the apex of the ovary, protruded beyond the tube of the calyx, and their upper portions free or rarely concrete. Achenia numerous, hairy. Seed solitary. Albumen none. Embryo straight: radicle superior: cotyledons flat.—Ex. *Rosa*.

Suborder 9. *Pomaceæ*. JUSS. Calyx five-toothed, the odd segment superior: tube more or less globose, extremely fleshy and juicy. Petals five, unguiculate. Stamens indefinite. Torus thin, lining the tube of the calyx, bearing the petals and stamens on its margin. Ovaria 1-5, adhering to the side of the calyx: ovules ascending, two collateral, or rarely solitary: styles 1-5: stigmas simple. Fruit a pomum, 1-5-celled, or spuriously 10-celled: endocarp cartilaginous, spongy, or bony. Seeds solitary. Albumen none. Radicle short, next the hilum: cotyledons flat, or rarely convolute.—Trees or shrubs. Leaves alternate, stipulate.—Ex. *Pyrus*, *Crateagus*.

These nine suborders we do not hesitate in thinking portions of one; nor are genuine marks to be found between them. The most distinct is the Chrysobalanæ: the Neillieæ form a passage to the Homalineæ: but as for the others, we do not see how they are to be limited *inter se*. The true Sanguisorbeæ have no petals, few stamens, and definite ovaria; while the Potentillæ ought to have petals, numerous stamens, and numerous carpels: but *Cercocarpus* having no petals, has many stamens; *Sibbaldia* has petals, with five stamens and carpels; *Arenaria* has petals, definite stamens, and two carpels; thus leaving between the two suborders no character but in the presence or absence of the petals. Nor is Roseæ scarcely distinct on the one hand from Potentillæ, and on the other from Pomaceæ. Neuradæ we have referred to the Ficoideæ.—As to properties, the fruit of some of the Chrysobalanæ is eaten under the name of the cocoa-plum. Amygdalæ, including the Plum, Cherry, Almond, Peach, &c. are well known: the leaves and kernel contain hydrocyanic acid, and are usually poisonous. The other suborders are in general wholesome: they contain an astringent principle, on account of which some are used as febrifuges: the roots of a few are emetic.

Order 63. *Calycanthææ*. LINDL.

Sepals and petals confounded, indefinite, combined in a fleshy tube: estivation imbricate. Stamens indefinite, perigynous: anthers extrorse, bursting longitudinally. Torus lining the tube of the calyx. Ovaria several, simple, one-celled, adhering to the tube of the calyx: ovules solitary, or in pairs, one above the other: style terminal. Achenia inclosed within the fleshy tube of the calyx. Seed solitary. Albumen 0. Embryo straight: radicle inferior: cotyledons convolute.—Shrubs with square stems. Leaves opposite, simple, scabious, exstipulate. Flowers bisexual, axillary, solitary.—Ex. *Calycanthus*, *Chimonanthus*.

Most nearly allied to the Rosaceæ, although in some points they bear a resemblance to the Monimiæ: even to the Magnoliaceæ there is an affinity through *Illicium*. The aromatic fragrance of the flowers is the only known property.

Order 64. *Salicariææ*.¹ JUSS.

Suborder 1. *Lythrarieæ*. JUSS. Calyx tubular or campanulate, lobed, the lobes sometimes with intermediate ac-

cessory lobes or teeth: estivation valvate. Petals alternate with the lobes of the calyx, very deciduous, sometimes wanting. Stamens inserted a little below the petals, equal in number to them, or two, three, or four times as many, rarely fewer: anthers introrse, bilocular, bursting longitudinally. Ovarium superior, 2-4-celled: ovules numerous: style filiform: stigma usually capitate. Placentæ in the axis. Capsule membranous, surrounded by, but not combined with, the calyx; usually one-celled by the obliteration of the dissepiments, bursting longitudinally or irregularly. Seeds numerous, small, apterous or winged. Albumen none. Embryo straight: radicle next the hilum: cotyledons flat and foliaceous.—Herbs or shrubs with usually tetragonal branches. Leaves opposite or (seldom) alternate, entire, exstipulate, and without glands. Flowers bisexual.—Ex. *Lythrum*, *Lagerstræmia*.

Suborder 2. *Ceratophylleæ*. GRAY. Calyx 10-12-partite, lobes equal. Petals none. Stamens 12-20: anthers ovato-oblong, bilocular, bicuspidate, sessile. Ovarium free, ovate, one-celled: ovule solitary, pendulous: style filiform, oblique: stigma simple. Nut one-celled, indehiscent, terminated by the indurated style. Seed solitary, pendulous. Albumen none. Embryo straight: radicle superior: cotyledons four! alternately smaller.—Aquatic herbs. Leaves verticillate, cut into filiform lobes. Flowers unisexual.—Ex. *Ceratophyllum*.

Much as these two suborders differ in appearance, we have the authority of Richard for uniting them. It must be confessed, however, that their chief great resemblance is in the persistent calyx, free from, but surrounding, the fruit.—*Lythrum Salicaria* is astringent: a few species of the order are used for dyeing.

Order 65. *Rhizophoreæ*. R. BROWN.

Calyx 4-13-lobed: estivation valvate, or sometimes calyptriform. Petals inserted on the calyx, alternate with the lobes, and equal to them in number. Stamens inserted with the petals, twice or thrice as many: filaments distinct, subulate: anthers erect, straight, or incurved. Ovarium two-celled, adherent to the calyx, or (rarely) free: ovules two or more in each cell, pendulous. Fruit indehiscent, one-celled. Seed pendulous, solitary. Albumen none. Radicle long: cotyledons flat.—Trees or shrubs. Leaves simple, opposite, with stipules between the petioles.—Ex. *Rhizophora*.

Allied on the one hand to Salicariææ, and on the other to Saxifrageæ (Cunoniææ): to Vochysiaceæ and Combretaceæ its affinity is also strong.—The bark is astringent, and in some cases is used for dyeing black.

Order 66. *Vochysiaceæ*. ST HILAIRE.

Sepals 4-5, unequal, united at the base, the upper one spurred: estivation imbricate. Petals one, two, three, or five, alternate with and inserted into the base of the sepals, unequal. Stamens 1-5, opposite to or alternate with the petals, for the most part sterile, one having an ovate, fertile, four-celled anther. Ovarium free, or adherent to the calyx, three-celled: ovules solitary or in pairs, rarely more: style and stigma one. Placentæ in the axis. Capsule triquetrous, three-celled, three-valved, loculicidal, or rarely septicidal. Seeds usually 1-2 (rarely many) in each cell, erect (LINDL.). Albumen none. Embryo straight: radicle short, superior: cotyledons large, foliaceous, convolute, plicate.—Trees. Leaves opposite, entire, stipulate (very rarely exstipulate).—Ex. *Vochysia*, *Qualea*.

An order as yet ill understood, but seemingly most allied to Combretaceæ and Onagrarieæ.

¹ We have arranged this and the fifteen following orders somewhat differently from what De Candolle has done; but we trust they are disposed in a more natural series.

Order 67. *Combretaceæ*. R. BROWN.

Calyx 4-5-lobed, lobes deciduous. Petals alternate with the lobes, or wanting. Stamens twice as many as the lobes, rarely equal in number to them or thrice as many: filaments distinct, subulate: anthers bilocular, bursting longitudinally. Ovarium adherent with the tube of the calyx, one-celled: ovules 2-4, pendulous from the apex of the cavity: style one, slender: stigma simple. Fruit drupaceous, baccate, or nut-like, one-celled, indehiscent, often winged. Seed solitary (by abortion), pendulous. Albumen none. Radicle superior: cotyledons leafy, usually convolute, sometimes plicate.—Trees or shrubs. Leaves alternate or opposite, exstipulate.—Ex. *Combretum*, *Terminalia*.

Allied to Onagraceæ, Memecyleæ, Myrtaceæ, and even to Santalaceæ and Elæagneæ.—The species of this order are mostly astringents: the bark, therefore, of some is used for tanning; others are employed in dyeing. *Terminalia Vernix* is said to furnish the Chinese varnish, which is poisonous.

Order 68. *Memecyleæ*. D. C.

Calyx 4-5-lobed or toothed. Petals 4-5, alternate with the sepals. Stamens twice as many as the petals: filaments distinct: anthers incurved, two-celled. Ovarium 2-8-celled, adherent with the tube of the calyx: ovules solitary: style one, filiform: stigma simple. Berry (balausta?) crowned by the limb of the calyx, one, four, or eight-celled. Seeds solitary, pendulous. Albumen none. Embryo straight: radicle superior: cotyledons foliaceous, convolute.—Shrubs. Leaves opposite, simple, entire, without stipules or dots, penninerved or rarely three-nerved.—Ex. *Memecylon*, *Mouriria*.

Near Myrtaceæ and Melastomaceæ, and in some respects intermediate.

Order 69. *Melastomaceæ*. JUSS.

Calyx with four or five teeth or divisions, which are more or less deep, or are sometimes united and separate from the tube like a lid. Petals equal to the segments of the calyx, perigynous. Stamens equal in number to the petals, and alternate with them, usually with intermediate sterile ones: filaments in estivation bent downwards between the carpels and the calyx: anthers long, two-celled, usually bursting by two terminal pores, sometimes longitudinally. Ovarium with several cells, more or less cohering with the calyx by its angles, but otherwise free: ovules indefinite: style one: stigma simple, entire, punctiform or capitate. Placentæ in the axis. Fruit plurilocular, either free, and then capsular, valvate, and loculicidal, or adherent, baccate (a balausta), and indehiscent. Seeds numerous, minute. Albumen 0. Embryo straight or curved: radicle pointing to the hilum: cotyledons equal or unequal.—Leaves opposite, undivided, not dotted, 3-9-nerved.—Ex. *Melastoma*, *Rhexia*, *Chorizanthe*.

Bordering on both the Salicariæ and Myrtaceæ, but differing from these and other allied orders in several particulars. The great characteristic of this order is the singular situation of the filaments in estivation.—There are no unwholesome species in this large family, and the succulent fruit of several is eatable and pleasant. They all possess a slight degree of astringency.

Order 70. *Alangieæ*. D. C.

Calyx campanulate, 5-10-toothed, with an annular fleshy disc, or continuation of the torus at the base of the segments. Petals as many as the segments of the calyx, linear, reflexed: estivation twisted. Stamens long, exserted, two or four times as many as the petals: filaments distinct, villous at the base: anthers introrse, two-

celled, often sterile. Ovarium globose: style one, subulate: stigma capitate or conical. Berry (balausta) oval, coherent with the tube of the calyx, and somewhat crowned by its limb, fleshy, slightly ribbed, 1-3-celled: endocarp sometimes osseous, and separating from the sarcocarp like a putamen. Seeds solitary, pendulous. Albumen fleshy, brittle. Embryo straight: radicle long, ascending: cotyledons flat, foliaceous.—Trees. Leaves alternate, exstipulate, entire, not dotted.—Ex. *Alangium*.

Closely allied to the Melastomaceæ, from which they differ in very few particulars. To Myrtaceæ they also bear so strong a resemblance, that till lately they were inserted in that order.—The fruit is eatable. The juice of the root is said to be vermifuge and hydragogic; and the root itself, in powder, efficacious against the bite of serpents.

Order 71. *Philadelphææ*. DON.

Calyx 4-10-divided. Petals alternate with the segments of the calyx, and equal to them in number: estivation convolute-imbricate. Stamens indefinite, in one or two rows, or rarely ten. Ovarium coherent with the tube of the calyx: styles distinct, or united into one: stigmas 4-10. Capsule free above, 4-5-celled. Seeds indefinite, scobiform, subulate, smooth, pendulous, heaped in the inner angle of the cells upon an angular placenta: arillus loose, membranous. Albumen fleshy. Embryo straight, about as long as the albumen: radicle superior, obtuse: cotyledons flat, shorter than the radicle.—Shrubs. Leaves deciduous, opposite, without dots or stipules.—Ex. *Philadelphus*, *Deutzia*, *Decumaria*.

This small order borders on the Myrtaceæ, and also on the Saxifrageæ. *Decumaria* is usually described with a fruit of 7-10 cells, but Mr Don¹ asserts it has but four. Mr Lindley doubts if the cover to the seed be an arillus; but if it were the testa, then the interior portion could not have been attached next the hilum, as in these plants, in order to have produced a radicle pointing also towards it.

Order 72. *Myrtaceæ*. JUSS.

Calyx 4-5-6-8-cleft, the limb sometimes cohering in two portions, sometimes in one, and then falling off like a cap or lid. Petals perigynous, as many as the segments of the calyx, and alternating with them, sometimes slightly united at the very base; rarely none: estivation imbricate. Stamens inserted with the petals, twice as many as the petals, or (usually) indefinite: filaments either all distinct, or monadelphous, or variously polyadelphous, in estivation curved inwards. Anthers ovate, bilocular, small, bursting longitudinally. Ovarium cohering with the tube of the calyx, formed of two, four, five, or six carpels, the dissepiments rarely imperfect, and hence one to six-celled: style and stigma simple. Placentæ in the axis. Fruit dry or fleshy, dehiscent or indehiscent, 2-6 or many-celled, or by the obliteration of the dissepiments one-celled. Seeds rarely solitary, or few, usually indefinite. Albumen 0. Embryo straight or curved: radicle next the hilum: cotyledons distinct, or sometimes consolidated into one mass with the radicle.—Trees or shrubs. Leaves usually opposite, entire, and with transparent dots, sometimes alternate, rarely serrated, and rarely without dots.—Ex. *Chamaelaurium*, *Calytrix*: *Leptospermum*, *Eucalyptus*: *Myrtus*, *Eugenia*: *Barringtonia*, *Gustavia*: *Bertholletia*, *Lecythis*.

This very extensive family has been separated into five sections by De Candolle; but, however desirable it might be to erect these into independent orders, no good characters have yet been pointed out. We shall here give a summary of the sections. 1. *Chamaelauriæ* has a one-

¹ Jamieson's Jour. Jan. 1830, p. 170.

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celled ovary and capsule, with leaves opposite, and dotted. 2. *Leptospermæ* has a plurilocular capsule, opposite or alternate leaves, which are usually dotted. 3. *Myrtæ* has a berry or balausta, distinct stamens, opposite leaves, which are almost always dotted. 4. *Barringtonæ* has a fleshy, one-celled fruit, monadelphous stamens, opposite or verticillate leaves without dots. 5. *Lecythideæ* has a plurilocular woody capsule that opens with a lid or remains closed, monadelphous stamens, and leaves alternate, and not dotted. To the *Myrtæ* we, with Mr Lindley, unite the *Granatæ*, because *Punica* or the pomegranate only differs by having its two verticels of carpels developed instead of one, as in plants not in a state of cultivation: the inner series (or those at the bottom of the fruit) have their placenta in the axis; but the outer series, forced to the top of the fruit by the contraction of the mouth of the tube of the calyx, having their placenta in the ovary at the back of the inner carpels, exhibit them in the ripe fruit in a horizontal position on the upper surface of the lower cells.—The dots on the leaves and other parts indicate the presence of a volatile oil, which is aromatic and pungent, and gives the perfume to the cloves of commerce, and to several fruits of this order. The fleshy seeds of the *Lecythideæ* are eatable, and highly esteemed.

Order 73. *Onagrarieæ*. JUSS.

Calyx tubular, with the limb usually quadripartite, sometimes sexpartite, very rarely 2-3-partite, the lobes sometimes cohering in various degrees: estivation valvate. Petals usually equal in number to the lobes of the calyx, regular (or rarely irregular), inserted at the top of the tube: estivation twisted. Stamens definite: filaments distinct: anthers oblong or ovate: pollen triangular. Ovary plurilocular, cohering with the tube of the calyx: ovules indefinite, rarely definite: style filiform: stigma capitate or lobed. Fruit baccate or capsular, dehiscent or indehiscent, 1-2-4-celled. Seeds indefinite, rarely definite, or solitary in each cell. Albumen 0. Embryo straight: radicle long and slender, pointing to the hilum: cotyledons short, equal, or rarely unequal.—Leaves alternate or opposite, not dotted.—Ex. *Montinia*, *Fuchsia*, *Epilobium*, *Jussiaea*, *Circæa*, *Trapa*.

Distinguished from *Salicariæ* by the adherent fruit; from *Myrtæ* by the definite stamens and leaves not dotted; from *Haloragæ* by the filiform style and absence of albumen; and from *Loasæ* by the seeds attached to the central axis, and not to the wall of the fruit. With all these, however, *Onagrarieæ* are intimately allied. Lindley has separated from this family *Circæa* and *Trapa*; the former on account of its solitary seeds, but then *Gaura* is in the same predicament. *Trapa* is chiefly remarkable for its very large seeds and unequal cotyledons.—Almost no properties have been recorded of these beautiful plants. The seeds of *Trapa*, which are very large, are eatable.

Order 74. *Haloragææ*. R. BROWN.

Suborder 1. *Cercodææ*. RICH. Calyx with the limb 3-4-partite or entire. Petals inserted at the top of the tube of the calyx, and alternate with its segments, or wanting. Stamens inserted with the petals, twice as many, or equal to them in number, rarely fewer. Ovary closely cohering with the tube of the calyx, 1-3-4-celled: ovules solitary, pendulous: style 0: stigmas equal in number to the cells, papulose on their inner surface, or penicilliform. Fruit dry and indehiscent, membranous or bony, with as many cells as stigmas (rarely fewer by abortion). Seeds solitary, pendulous. Albumen fleshy, sometimes thin. Embryo straight, in the axis of the albumen: radicle superior, long: cotyledons minute.—Leaves alternate, opposite, or whorled. Flowers axillary, sessile, occasionally unisexual.—Ex. *Haloragis*, *Hippuris*, *Myriophyllum*.

Suborder 2. *Callitricheæ*. LINK. Calyx exceedingly minute, inconspicuous, surrounding the ovary, soon rupturing. Petals wanting. Stamen one, rarely two: filament filiform, grooved in the inside: anther reniform, one-celled, bursting transversely. Ovary solitary, tetragonal, compressed, two-celled (of two carpels, the dorsal sutures being slightly inflexed towards the axis): ovules in pairs, peltate: styles none: stigmas two, filiform, papulose on their inner surface. Fruit two-celled, contracted at the dorsal sutures, at once loculicidal and septicidal (thus as if composed of four achenia, attached round the base of the stigmas by the centre of their inner angle). Seeds, two in each cell, divaricating (or in each achenium solitary), peltate. Embryo slightly curved, in the axis of a thin fleshy albumen: radicle superior, long: cotyledons very short.—Aquatic herbaceous plants. Leaves opposite, simple, entire. Flowers axillary, very minute, usually unisexual, sometimes with two small bractæ at the base of the short peduncle.—Ex. *Callitriche*.

Between these two suborders there is little difference except the seeds solitary or in pairs; the last is usually described with four cells to the fruit, although with only two stigmas, an incongruity too obvious to require discussion; the structure is as in the *Boraginææ* and *Labiataæ*. The nearest affinity is with the *Onagrarieæ*, from which they only differ by the presence of albumen, which, however, is sometimes very thin indeed.

Order 75. *Loasææ*. JUSS.

Calyx five-parted, persistent, in estivation spreading. Petals five, cucullate, arising from the top of the tube of the calyx, and alternate with its segments, sometimes with an inner series of five, either similar to the outer or dissimilar: estivation inflexed, valvate. Stamens indefinite, in several rows, distinct, or polyadelphous, each parcel opposite the outer petals: filaments subulate, unequal, the outer ones often sterile. Ovary adherent with the tube of the calyx, or (rarely) only inclosed within it, one-celled: ovules several: styles 3-7, combined into one: stigma one or several. Placenta parietal. Fruit capsular or succulent, one-celled, 3-7-valved, septicidal. Seeds usually indefinite, rarely definite, without an arillus. Embryo in the axis of a fleshy albumen, straight: radicle pointing to the hilum: cotyledons small, flat.—Herbaceous plants, hispid, with sharp stinging hairs. Leaves opposite or alternate. Peduncles axillary, one-flowered.—Ex. *Loasa* (Plate CXVIII.), *Mentzelia*.

This family is most readily distinguished from those, with which it might be otherwise confounded, by the parietal placenta. With *Onagrarieæ* it has much, but with *Cucurbitaceæ*, as we conceive, little affinity. The cuticle of the stem sometimes separates readily while growing.—The stinging property is the only one known.

Order 76. *Cucurbitaceæ*. JUSS.

Calyx 5-toothed, sometimes obsolete. Petals five, distinct or more or less united, sometimes scarcely distinguishable from the calyx, strongly marked with reticulating veins, sometimes fringed. Stamens five, distinct or triadelphous: anthers 2-celled, usually long and sinuous, rarely ovate. Ovary adhering to the tube of the calyx, of 3-5-carpels, spuriously one-celled: ovules solitary or indefinite: style short: stigmas 3-5, two-lobed, very thick, velvety or fringed. Fruit a pepo. Seeds usually ovate and flat, enveloped in a juicy, or dry and membranous, arilla: testa coriaceous, often thick at the margin. Albumen 0. Embryo straight: radicle next the hilum: cotyledons foliaceous, palminerved.—Stem succulent, climbing by means of lateral tendrils formed of abortive stipules. Leaves palminerved, alternate. Flowers usually unisexual.—Ex. *Cucumis*, *Bryonia*.

This order bears considerable affinity to the last. Brown

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and Jussieu consider the calyx and corolla together as a double calyx; and were it not for the obvious affinity of Belvisiaceæ, we would have removed it to the Monochlamydeæ.—The melon, the cucumber, and the gourds, come here, of which the uses are well known. Some, as the colocynth, are extremely bitter and purgative. The seeds of all are sweet and oily, and from some a considerable quantity of fine flavoured oil may be expressed.

Order 77. *Papayaceæ*. AGARDH.

Flowers unisexual. Calyx minute, five-toothed. Corolla monopetalous, inserted into the base of the calyx, in the male tubular and five-lobed, in the female divided nearly to the base into five segments. Stamens ten, inserted on the throat of the corolla: anthers introrse, two-celled, bursting longitudinally; those alternate with the lobes of the corolla on short filaments, those opposite to the lobes sessile. Ovarium free, one-celled: ovules indefinite: stigmas sessile, five-lobed, lacerated. Placentas five, parietal. Fruit succulent, indehiscent, one-celled. Seeds indefinite, parietal, enveloped in a loose mucous coat: testa brittle, pitted. Embryo in the axis of a fleshy albumen: radicle slender, turned towards the hilum: cotyledons flat.—Trees without branches. Leaves alternate, lobed, on long slender petioles.—Ex. *Carica* (Plate CXXIV.)

Formerly referred to the neighbourhood of the Urticeæ, but now considered as more allied to the Cucurbitaceæ and Passifloreæ, especially in the structure of its fruit.—The tree yields an acrid milky juice. The fruit is cooked and eaten. Its juice, when unripe, is a very powerful vermifuge. When newly-killed meat of any kind is suspended among the leaves, it in the course of a few hours becomes quite tender.

Order 78. *Belvisiaceæ*. R. BROWN.

Calyx monosepalous, persistent; limb divided. Corolla monopetalous, plaited, deciduous, inserted on the summit of the tube of the calyx. Stamens either indefinite, or ten with an outer row of abortive ones converted into a much lacinated inner monopetalous corolla, distinct or polyadelphous: anthers two-celled. Ovarium adhering to the tube of the calyx, one-celled: ovules indefinite: style one, short: stigma one, lobed or angular. Placentas parietal. Fruit a fleshy berry, crowned by the lobes of the calyx, one-celled. Seeds numerous, parietal.—Shrubs. Leaves alternate, simple, exstipulate. Flowers axillary and solitary, bisexual.—Ex. *Belvisia*, *Asteranthos*.

This small order exhibits much affinity to both Cucurbitaceæ and Passifloreæ. *Belvisia* is the same genus as *Napoleonea*, an older name, and which ought therefore to be retained. A comparison of *Asteranthos* will readily show that the inner corolla of *Belvisia* is, as we have stated, formed of an outer row of stamens.

Order 79. *Passifloreæ*. JUSS.

Sepals five or ten, united below into a more or less elongated tube, in one or two series, the outer being larger and foliaceous, the inner more petaloid, and sometimes wanting. Petals perigynous, usually represented by an annular or many filamentous processes, rarely five, distinct, and with the usual appearance of petals. Stamens five (very rarely indefinite), monadelphous, usually with processes from the torus between them and the petals: anthers versatile, turned outwards, two-celled, bursting longitudinally. Ovarium free, one-celled: ovules indefinite: styles three, or four, or none. Fruit naked or surrounded by the calyx, one-celled, usually three-valved, sometimes deliscent and loculicide, sometimes fleshy and indehiscent. Seeds indefinite, compressed, with an arillus or strophida: testa brittle, sculptured. Embryo straight, in the centre of a thin fleshy albumen: radicle pointing to the hilum.

Tribe 1. *Paropsiæ*. Petals five, membranaceous. Sta-

mens five or numerous: ovarium sessile: stigma of three, four, or five divisions: capsule with as many valves as divisions of the stigma. Seeds with a thick fleshy arilla: cotyledons foliaceous.—Shrubs, not climbing, without tendrils. Leaves alternate, without glands, exstipulate.—Ex. *Patrisia*, *Smeathmannia*.

Tribe 2. *Passifloreæ veræ*. Petals deformed. Stamens five, opposite the outer divisions of the calyx: ovarium stipitate: stigma sessile, three-lobed: capsule three-valved: seeds with a pulpy arillus: cotyledons foliaceous.—Usually climbing plants, with tendrils. Leaves alternate, stipulate, usually with glands on the petioles.—Ex. *Passiflora*, *Tacsonia*.

Tribe 3. *Malesherbiæ*. Calyx tubulous: petals changed into a ten-toothed membranous corona: stamens five, opposite the inner segments of the calyx (DON) or ten: ovarium stipitate: styles three, inserted below the apex of the ovary: capsule three-valved: placentas not higher up than the dehiscence of the valves: seeds strophiolate, cotyledons fleshy.—Suffrutescent plants, not climbing, without tendrils. Leaves alternate, simple, exstipulate, without glands.—Ex. *Malesherbia*.

We think the view we have taken of the corolla is borne out by a comparison of the different genera in this with all those in the allied neighbouring orders. There is a considerable affinity between these and the Violariæ, Flacourtiæ, and Cappariæ; but through *Malesherbia* it is strongest with the Turneraceæ.—In several species the succulent arillus and pulp has been found to be fragrant, cooling, and agreeable to the taste.

Order 80. *Turneraceæ*. D. C.

Calyx with five equal lobes: estivation imbricated. Petals five, inserted into the tube of the calyx: estivation twisted. Stamens five, inserted a little below the petals, and alternating: filaments distinct: anthers oblong, erect, two-celled. Ovarium free, one-celled: ovules indefinite: styles three, more or less cohering, or bifid: stigmas multifid. Placentas three, parietal. Capsule one-celled, three-valved, loculicide, bursting only half-way down. Seeds indefinite, crustaceous, reticulated, with a thin arillus on one side. Embryo slightly curved, in the middle of a fleshy albumen: radicle pointing to the hilum: cotyledons plano-convex.—Herbaceous or suffrutescent plants, pubescent, but not stinging. Leaves alternate, exstipulate, sometimes biglandular at the apex of the petiole.—Ex. *Turnera*, *Piriqueta*.

Considerably allied in habit to the Cistineæ, but differing in several respects in character. Kunth makes it a section of Loasæ; but the hairs are not stinging, the estivation of the corolla is twisted, and the styles only united at the base.

Order 81. *Fouquieriaceæ*. D. C.

Sepals five, persistent, ovate, or roundish: estivation imbricated. Petals five, regular, combined in a long tube, arising from the base of the calyx. Stamens 10-12, exserted, distinct, inserted with the petals, but not cohering with them: anthers two-celled. Ovarium free, sessile, somewhat three-celled: ovules indefinite: style filiform, trifid. Capsule triangular, imperfectly three-celled, three-valved, loculicide. Seeds partly abortive, compressed, winged, pendulous. Embryo straight, in the axis of a thin fleshy albumen: radicle at the opposite extremity from the hilum: cotyledons flat.—Trees or shrubs. Leaves fleshy, clustered in the axilla of a spine or cushion.—Ex. *Fouquieria*, *Bronnia*.

A family very little known, chiefly allied to the Portulacæ and Crassulacæ: to Turneraceæ their affinity is slight, as the fruit is really trilocular, and not one-celled.

Order 82. *Portulacææ*. JUSS.

Sepals two, seldom three or five, cohering at the base.

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Petals usually five, sometimes three, four, or six, or rarely wanting, distinct, or cohering at the base, inserted at the very base of the sepals, sometimes hypogynous, alternate with the sepals when of the same number. Stamens inserted with the petals, variable in number, all fertile: filaments distinct, when definite opposite to the petals or alternating with the sepals: anthers versatile, two-celled, bursting longitudinally. Ovary one, free, one-celled: style single or none: stigmas several. Capsule one-celled, dehiscing transversely (a pyxidium), or by three valves. Seeds numerous or three (solitary? (by abortion), in one plant scarcely known), attached to a central placenta or to the base of the fruit, campulitropous: testa usually crustaceous and black. Embryo curved round the circumference of a farinaceous albumen: radicle long.—Succulent plants. Leaves usually alternate, without stipules, or with scarious ones at each side at the base.—Ex. *Portulaca*, *Talinum*, *Calandrinia* (Plate CXVI.), *Montia*.

This family bears so much affinity to the Caryophyllæ, and to Illecebræ, that it is difficult to discriminate them. Caryophyllæ have, however, no stipules, nor a pyxidium, nor a calyx of two sepals; and the stamens (when few) are opposite to the sepals, and hypogynous. Illecebræ and Scleranthæ, on the other hand, have fertile stamens opposite the sepals, alternating with others that are either fertile or sterile, or with petals, which are sometimes wanting. We exclude from this order the genus *Aylmeria*, of which the two bracteas, five sepals, alternately sterile stamens and scarious stipules, mark it to belong to the Illecebræ near to *Cordia*.—Insipidity and want of smell are the usual qualities of this tribe.

Order 83. *Paronychiaceæ*. ST HIL.

Suborder 1. *Illecebræ*. R. BROWN. Sepals five, sometimes distinct, sometimes more or less cohering. Petals between the lobes of the calyx, sometimes conspicuous, usually small, and resembling sterile stamens, sometimes wanting. Stamens perigynous or hypogynous, opposite the sepals (when equal to them in number), some of them occasionally wanting: filaments distinct, or rarely united: anthers two-celled. Ovary superior: styles two or three, distinct or partially combined. Fruit small, one-celled, an utricle, or a 3-5-valved capsule. Seeds either numerous upon a free central placenta, or solitary and pendulous from a long funiculus arising from the bottom of the fruit. Embryo lying on one side of a farinaceous albumen, more or less curved: radicle pointing to the hilum: cotyledons small.—Leaves opposite or alternate, entire, with scarious stipules.—Ex. *Telephium*, *Illecebrum*, *Polycarpæa*, *Pollichia*.

Suborder 2. *Scleranthæ*. R. BROWN. Sepals 4-5, more or less cohering. Petals between the lobes of the calyx, perigynous, resembling sterile or fertile stamens, sometimes wanting. Stamens equal to the sepals in number, and opposite to them, sometimes fewer: filaments distinct: anthers two-celled, or rarely one-celled. Ovary superior: styles 2-3, distinct, or combined into one. Fruit one-celled, either an utricle covered by the calyx, or a three-valved capsule. Seeds campulitropous, solitary, pendulous from a long funiculus proceeding from the base of the utricle; or one or several attached to a central placenta. Embryo cylindrical, curved round a farinaceous albumen.—Leaves opposite, usually setaceous, without stipules.—Ex. *Scleranthus*, *Queria*, *Minuartia*.

Upon carefully examining these suborders, they will be found to present no difference but the presence or absence of the membranous stipules. These, however, will distinguish the Illecebræ from both the Caryophyllæ and Amaranthaceæ, and the accessory stamens or petals will separate the Scleranthæ from the Chenopodæ. The Paronychiæ, as a whole, form the passage to the Mono-

chlamydeæ; for what are here termed petals or abortive stamens, constitute in the Amaranthaceæ what are often called processes or teeth between the stamens, nor is there any practical difference between them. *Lithophila*, referred here by De Candolle, having three scarious bracteæ, a calyx of five unequal sepals, no corolla, two stamens united at their base with a membranous tube round the ovary, unilocular anthers, an utricular fruit, two long subulate stigmas, and no stipules, evidently belongs to the Amaranthaceæ, next to *Gomphrena*.

Order 84. *Crassulaceæ*. D. C.

Suborder 1. *Sempervivæ*. JUSS. Sepals 3-20, more or less united at the base. Petals equal in number to the sepals, and alternate with them, inserted in the bottom of the calyx, either distinct or cohering in a gamopetalous corolla. Stamens inserted with the petals, equalling them in number, and alternate, or twice as many, those opposite the petals being shortest, and arriving at perfection before the others. Filaments distinct, subulate: anthers bilocular, bursting longitudinally. Nectariferous scales (abortive stamens), one at the base of each ovary, sometimes obsolete. Ovaria equal in number to the petals, and opposite to them, one-celled, tapering each into a short style, distinct, or slightly connected at the base. Fruit of several follicles, opening by the ventral suture. Seeds variable in number. Embryo straight, in the axis of a thin, fleshy albumen: radicle pointing to the hilum.—Leaves succulent (or very rarely membranaceous), entire, or pinnatifid, exstipulate.—Ex. *Crassula*, *Sempervivum*, *Cotyledon*, *Penthorum*.

Suborder 2. *Galacineæ*. DON. Sepals 4-5, united at the base, persistent. Petals as many as the sepals, and inserted upon their bases, alternate with them, caducous. Stamens fertile, either equal in number to and alternate with the petals, or twice as many, inserted along with them, with sterile filaments alternating with them, either distinct or monadelphous: anthers two-celled bursting longitudinally, or one-celled bursting transversely. Ovary 3-4-celled, free: ovules indefinite, attached to the inner angles of the carpels: stigma three-cornered or four-lobed. Fruit of 3-4 follicles attached to each other by their inner angles and the stigma, dehiscing at their ventral and dorsal sutures. Seeds indefinite, minute. Embryo (only observed in *Galax*) straight in the midst of a copious fleshy albumen: radicle long, pointing to the hilum: cotyledons very short.—Herbaceous plants. Leaves radical, simple or pinnatifid, with glandular serratures: stipules none.—Ex. *Francoa*, *Galax*.

These two suborders are principally allied by their carpels not being attached to a central axis or column, and thus bear affinity to the Saxifragæ. The Galacineæ perhaps merit being considered as distinct; but in *Galax* the sterile filaments opposite to the petals have an affinity with the alternate fertile stamens of *Sedum*, a relation which is confirmed by the similarly-situated stamens in *Francoa* being also fertile. In this last genus the sterile filaments are placed between the stamens and petals, and therefore belong, a pair to each petal, and are the choristate lepalis of Dunal: in neither genera are there hypogynous scales, as is usual in the Sempervivæ.—This order possesses refrigerant and abstergent properties, mixed sometimes with a good deal of acidity.

Order 85. *Ficoideæ*. JUSS.

Suborder 1. *Aizoideæ*. SPRENG. Sepals definite (usually five, but varying from four to eight), more or less combined at their base, equal or unequal: estivation valvate or imbricate. Petals indefinite, coloured, sometimes wanting. Stamens perigynous, distinct, definite or indefinite: anthers oblong, incumbent. Ovary cohering with the tube of the calyx, or free, plurilocular (usually five-celled):

stigmata several, distinct. Capsule of several cells bursting in a stellate form at the apex. Seeds usually indefinite, rarely definite, or even solitary. Embryo on the outside of a mealy albumen, curved, or rarely spiral.—Leaves succulent, opposite or alternate, simple.—Ex. *Mesembryanthemum*, *Aizoon*.

Suborder 2. *Nitrariæ*. LINDL. Calyx five-toothed, fleshy, persistent. Petals five, perigynous: estivation inflexed, valvular. Stamens perigynous, three times the number of the petals: anthers erect, bursting longitudinally. Ovary free, three- (rarely six-) celled: ovules pendulous, attached by a long funiculus: style none: stigmata sessile on the attenuated apex of the ovary, as many as there are cells. Fruit drupaceous, one-celled: sarcocarp bursting at the apex by 3-6 valves: endosperm osseous. Seed solitary. Albumen none. Embryo straight: radicle next the hilum.—Shrubs. Leaves deciduous, succulent, alternate, sometimes fascicled.—Ex. *Nitraria*.

Suborder 3. *Neuradæ*. Calyx five-cleft, persistent: estivation slightly imbricated. Petals five, perigynous: estivation imbricated. Stamens ten, perigynous. Ovary syncarpous, cohering at the base with the short tube of the calyx, 5-10-celled: ovules solitary, pendulous: styles 5-10. Capsule 5-10-celled, depressed, indehiscent. Seeds solitary, pendulous, germinating within the capsule. Albumen none. Embryo slightly curved: radicle small, superior, next the hilum: cotyledons large.—Leaves pinnatifid or bipinnatifid, membranaceous, tomentose, stipulate.—Ex. *Neurada*, *Grieliun*.

This order is much allied to the Crassulacæ, but is distinguished by the truly syncarpous ovary; and also to the Portulacæ. The Nitrariæ show an affinity with the Rhamnæ, and the Neuradæ with the Rosacæ.—The succulent leaves of a few are eaten; some yield an abundance of soda.

Order 86. *Cactæ*. JUSS.

Sepals numerous, usually indefinite, and confounded with the petals, either crowning the ovary or covering its whole surface. Petals numerous, usually indefinite, sometimes irregular, inserted at the orifice of the calyx. Stamens indefinite, cohering more or less with the petals and sepals: filaments long, filiform: anthers ovate, versatile. Ovary fleshy, cohering with the tube of the calyx, one-celled: ovules indefinite: style filiform: stigmata several. Placentæ parietal, as many as the stigmata. Fruit succulent, one-celled. Seeds many, after having lost their adhesion nestling in a pulp, ovate or obovate: albumen none. Embryo straight, curved, or spiral: radicle thick, obtuse, next the hilum.—Succulent shrubs. Leaves almost always wanting; when present fleshy, smooth, entire, or spiniform. Flowers sessile.—Ex. *Cactus*, *Rhipsalis*.

Connected chiefly with Grossulariæ, and somewhat with Portulacæ: there is also an affinity with the Ficoideæ. The ovules in *Rhipsalis* are decidedly parietal, notwithstanding that this has been made an exception by De Candolle.—The fruit of several, known under the name of Indian Figs, is eaten: it resembles somewhat that of the Grossulariæ, but is more insipid, and is entirely destitute of the acidity found in that order. It is upon the *Cactus* (*Opuntia*) *Tuna*, and *cochinillifera*, principally, that the cochineal insect feeds.

Order 87. *Grossulariæ*. D. C.

Calyx 4-5-cleft, regular, coloured. Petals perigynous, as many as the segments of the calyx, alternate with them. Stamens 4-5, alternate with the petals, and inserted with them: filaments equal, distinct, usually short: anthers bilocular, bursting longitudinally (or occasionally transversely). Ovary one-celled, cohering with the tube of the calyx: ovules indefinite: style one, 2-4-cleft. Placentas

two, parietal, opposite. Berry crowned with the remains of the flower, one-celled, filled with pulp. Seeds numerous, suspended among the pulp by long filiform recurved funiculi: testa externally gelatinous. Albumen horny. Embryo straight, very minute at the opposite extremity from the hilum: radicle pointing to the hilum.—Shrubs. Leaves alternate, lobed: vernation plicate.—Ex. *Ribes*.

From the Cactæ they may be distinguished by the structure of the seed, and the habit; and from Onagariæ, Homaliniæ, and Loasæ, to all which they are related, by the same and various other characters.—Gooseberries and currants are well known as agreeable acid fruits, owing to the presence of malic acid in them. The black currant is tonic and stimulant, and the leaf is sometimes used to heighten the flavour of bad tea.

Order 88. *Saxifragæ*. JUSS.

Sepals usually five (rarely three, four, seven, or nine), more or less cohering at their base: the limb usually persistent. Petals as many as sepals (except in *Donatia*), inserted on the tube of the calyx, alternate with its lobes, deciduous or persistent, very rarely wanting. Stamens perigynous, either equal to (or rarely fewer than) the petals, and alternate with them; or twice as many as the petals, some alternate, some opposite to them (in one species, by the abortion of the alternating stamens, there are only five, and opposite to the petals); or (in *Bauera*) indefinite: filaments subulate: anthers ovate, two-celled, bursting longitudinally (in *Bauera*) by two pores. Ovary partly coherent with the tube of the calyx, formed of two (rarely 3-5) carpels, cohering by their introflexed sides, or margins: styles as many as the carpels, distinct, or more or less combined: stigmata capitate or clavate. Placentæ along the introflexed margins of the carpels, either throughout the whole length, or at the base only, or at the apex, usually separating with the carpels, rarely attached to a central axis. Fruit capsular, usually of two (rarely 3-5) carpels or valves, the margins of which are either entirely introflexed, or partly introflexed, or scarcely at all when the fruit is one-celled: carpels dehiscing at the ventral suture, separating from each other, either from the base upwards, or from the apex downwards. Seeds usually numerous, rarely definite: albumen fleshy. Embryo small, in the midst of the albumen: radicle pointing towards the hilum.

Tribe 1. *Escalloniæ*. R. BR. Petals and stamens five (rarely six): ovary adherent, or rarely free: styles two or three combined into one.—Shrubs or trees. Leaves alternate, simple, exstipulate.—Ex. *Escallonia*, *Itca*.

Tribe 2. *Cunoniæ*. R. BR. Petals 4-5, or none: stamens 8-10: ovary usually free: styles 2-3, distinct, or rarely combined.—Shrubs or trees. Leaves opposite, with interpetiolar stipules.—Ex. *Cunonia*, *Weinmannia*.

Tribe 3. *Bauerei*. LINDL. Petals 7-9: stamens indefinite: anthers biporse: ovary almost free: styles 2-3, distinct.—Shrubs. Leaves opposite, ternate, exstipulate.—Ex. *Bauera*.

Tribe 4. *Hydrangeæ*. D. C. Petals five: stamens ten: ovary adherent, or rarely free: styles 2-5, distinct, or combined.—Shrubs. Leaves opposite, exstipulate. Flowers corymbose; the exterior, and sometimes all of them, sterile and dilated.—Ex. *Hydrangea*, *Broussaisia*.

Tribe 5. *Saxifragæ*. D. C. Petals 4-5, or wanting: stamens 8-10, or 3-5: ovary adherent or free: styles 2-3, distinct, or rarely combined.—Herbs. Leaves exstipulate, alternate, or rarely opposite. Flowers in a raceme or panicle, rarely solitary, all fertile.—Ex. *Saxifraga*, *Chrysosplenium*, *Heuchera*.

We follow De Candolle in not breaking up this large order, each tribe passing imperceptibly into another. It seems to form a central point between several other or-

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ders. Thus, through Escalloniæ it is allied to the Grossulariæ and Vacciniæ; to the Philadelphæ and Caprifoliæ through Hydrangæ; and to Hypericiniæ through Saxifragæ. De Candolle also compares it with the Umbellifera. The albumen of *Escallonia*, though fleshy, is very oily; and the embryo is in the centre of the albumen, with the radicle pointing to the hilum. Mr Lindley says, erroneously, that the embryo is "in the apex of the albumen, and the radicle at the opposite extremity of the hilum."—The species of Saxifragæ are astringent; the properties of the other tribes are unknown.

Order 89. *Bruniaceæ*. R. BROWN.

Calyx five-cleft: estivation imbricated. Petals alternate with the segments of the calyx, inserted on its throat: estivation imbricated. Stamens alternate with the petals, arising with them, or from a discoid torus: anthers turned inwards, two-celled, bursting longitudinally. Ovarium free, or usually cohering with the tube of the calyx, 1-3-celled: ovules suspended, solitary, or two collateral ones in each cell, very rarely numerous: style simple or bifid: stigmas one, or 2-3, small, and papilliform. Fruit dry, bicoccos, or indehiscent and one-celled, usually crowned by the persistent calyx. Seeds (some of them usually abortive) suspended, sometimes with a short arillus. Embryo minute, at the base (next the hilum) of a fleshy albumen: radicle pointing to the hilum: cotyledons short, fleshy.—Branched, heath-like shrubs. Leaves small, imbricated, rigid, entire. Flowers small, capitate, or rarely paniced, spiked, or terminal, and solitary.—Ex. *Brunia*, *Staavia*, *Berardia*.

An order thought by De Candolle to be allied to Rhamnæ, but now considered as much nearer to Hamamelidæ, or even Myrtacæ. *Thamnea* has a one-celled ovary with a central columnar axis, from the apex of which the ovules hang, indicating a tendency in this order to have a plurilocular fruit.

Order 90. *Hamamelidæ*. R. BROWN.

Calyx four-lobed or truncate, with 5-7 callous teeth. Petals inserted on the calyx, usually long and linear, equal in number to (rarely by abortion fewer), and alternating with, the calycine segments, rarely changed into fertile stamens. Stamens twice as many as the petals; all fertile when the petals bear anthers, half of them (those opposite to the petals) sterile when there are true petals: anthers erect, two-celled, each cell dehiscing longitudinally at the side, either by a valve opening inwards, or by a simple fissure. Ovarium coherent at the base with the tube of the calyx, two-celled: styles two (rarely by accident three). Capsule two-celled, two-valved, loculicide. Seeds solitary, pendulous. Embryo straight, in the axis of a fleshy albumen: radicle superior, next the hilum: cotyledons foliaceous, plane, or slightly involute at their base.—Shrubs. Leaves alternate, petiolate, penninerved, with two stipules. Flowers axillary, nearly sessile, fasciculate, usually with bractæas, sometimes unisexual.—Ex. *Hamamelis*, *Fothergilla*.

The above character is perhaps a little strained to include *Fothergilla*, a genus, however, referred here both by Nuttall and Brown: perhaps it must be even still more modified when *Trichocladus*, another genus of the order, becomes better known. The relation of *Fothergilla* to *Pachysandra* shows some affinity between this family and Euphorbiacæ; and there is a manifest connection also between it and the Amentacæ. There is likewise an affinity to the Alangiæ, Bruniacæ, the Rhamnæ, and the Haloragæ.

Div. II.—*Dichlamydeæ Calycifloræ*. D. C.

(3. Epipetalæ.¹ Juss.)

Order 91. *Umbellifera*. Juss.

Calyx five-toothed, or entire. Petals five, inserted on the outside of a fleshy disc, around the top of the ovary, alternate with the teeth of the calyx, often inflexed at the point, the inflexed portion cohering with the middle vein of the lamina: estivation somewhat imbricate, rarely valvate. Stamens five, alternate with the petals, distinct, during estivation inflexed: anthers ovate, two-celled, dehiscing longitudinally. Ovarium cohering entirely and closely with the calyx, crowned by a double fleshy disc (an expansion of the torus), two-celled: ovules solitary, pendulous: styles two, distinct: stigmas simple. Fruit dry (a *cremocarpium*), consisting of two carpels (or *mericarpia*) which adhere by their face (*commissura*) to a common axis (*carpopodium*), but in maturity separate from it, and are pendulous: each carpel indehiscent, traversed by five longitudinal ridges (*juga primaria*), one opposite to each petal and each stamen; and often also by alternating nerves (*juga secundaria*), the ridges being separated by channels. In the substance of the pericarp are linear receptacles of oily matter (*vitæ*), usually opposite the channels, sometimes below the ridges, rarely wanting. Seed pendulous, usually cohering with the carpel, rarely loose. Embryo minute, at the base (that is, at the apex of the fruit) of a copious horny albumen: radicle superior, pointing to the hilum.—Herbaceous, or rarely suffrutescent plants: stem usually fistular and furrowed. Leaves alternate, very rarely opposite, simple (without articulations), variously cut, sometimes reduced to the petiole (*phylloodium*). Flowers in umbels, the umbel sometimes capitate, usually with an involucre.—Ex. *Conium*, *Eryngium*, *Hydrocotyle*.

Supposed to be allied to Saxifragæ (through *Hydrocotyle*), to Araliacæ, and through them to Ampelidæ. Lindley seems to think them nearest to Ranunculacæ. Perhaps each flower is made up of two, a structure explained by that of *Dampiera* among the Campanulacæ (*Scævolæ*), and rendered probable by that of *Heteromorpha*. Then each petal being formed of two cohering by their margins and an intervening stamen, we should have two flowers each with five petals, five stamens, and one style, united together; and thus other affinities must be looked for.—The fundamental organs of this order are usually very poisonous, at all events ought to be looked on with suspicion, although the roots of a few by cultivation seem to lose their virulent qualities. The fruit is in no case hurtful, and is usually a warm and agreeable aromatic. Gum ammoniac, galbanum, assafœtida, and opoponax, are obtained from plants of this family.

Order 92. *Araliacæ*. Juss.

Calyx entire or toothed. Petals 5-16, alternate with the teeth of the calyx, very rarely wanting, and then (in *Adoxa*) perhaps changed into petals: estivation valvate. Stamens as many as the petals, rarely twice as many, inserted below the margin of a large epigynous disc: anthers two-celled. Ovarium cohering with the tube of the calyx, of two or more cells: ovules solitary, pendulous: styles two or more, distinct, concrete, or rarely wanting: stigmas simple. Fruit usually fleshy, 2-15-celled, crowned by the limb of the calyx: endocarp crustaceous. Seeds solitary, pendulous. Embryo small, surrounded by a copious fleshy albumen, close to the hilum: radicle pointing to the hilum, superior.—Trees, shrubs, or herbaceous plants.

¹ We keep the subdivisions Epipetalæ, Epicorollæ, and Epistamina, although the plants belonging to them have in reality the stamens and petals as much perigynous as the Grossulariæ, Ficoidæ, &c. which have a perfectly adherent fruit.

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Leaves alternate, exstipulate. Flowers umbelled or capitate.—Ex. *Aralia*, *Adoxa*, *Hedera*.

This borders strongly on the Umbelliferae, Ampelideae, and also the Corneae.—The famed Ginseng, which, when first introduced into Europe at the beginning of the seventeenth century, sold for its weight in gold, is a species of *Panax*; it is supposed to have a stimulating and invigorating property when fresh, but when dry has now been found of little use. The berries of *Hedera* are purgative.

Order 93. *Corneae*. D.C.

Calyx four-lobed. Petals four, oblong, broad at the base, regular, inserted on the top of the tube of the calyx: estivation valvate. Stamens four, alternate with the petals, inserted with them: anthers two-celled. Ovarium closely cohering with the tube of the calyx, two-celled: ovules pendulous, solitary: style filiform: stigma simple. Fruit fleshy, crowned by the remains of the calyx, two-celled (or rarely one-celled by abortion): endocarp thick and bony. Seeds solitary, pendulous: albumen fleshy. Embryo straight: radicle superior, shorter than the oblong cotyledons.—Trees, shrubs, or herbs. Leaves opposite (in two species only alternate). Flowers capitate, umbelled, or corymbose, naked or with an involucre.—Ex. *Cornus*.

Approaching to the Hamamelideae and Araliaceae (from which it is best distinguished by the opposite leaves, bony endocarp, and a ternary arrangement of the parts of the flower); and also to Caprifoliaceae; but this last has a gamopetalous corolla, and a quinary arrangement in the flowers. One species among the Corneae, however, the *Mastixia pentandra*, is said to have the quinary arrangement and alternate leaves, but is not well known.—The fleshy part of the fruit is sometimes eaten. The bark of *Cornus florida* and *C. sericea* is tonic and febrifuge, and has been substituted in North America for the Peruvian bark.

Div. II.—*Dichlamydeae Calyciflorae*. D. C.

(4. *Epicorollae Corisantherae*. Juss.)

Epicorollae Corisantherae.

Order 94. *Loranthaceae*. Rich. and Juss.

Calyx with a smaller calyx or bractae at the base of its tube; limb short, entire or lobed. Petals 4-8, free or more or less united: estivation valvate. Stamens as many as the petals, and opposite to them: filaments more or less combined with the petals: anthers versatile, or erect, or adnate to the corolla. Ovarium cohering with the tube of the calyx, one-celled: ovule solitary, pendulous: style filiform or none: stigma capitate. Fruit fleshy, crowned by the calyx, one-celled: endocarp membranaceous. Seed one, pendulous. Embryo straight in the axis of a fleshy albumen: radicle superior, next the hilum.—Shrubs almost all parasitical. Leaves fleshy, entire, opposite, rarely alternate or wanting.—Ex. *Viscum*, *Loranthus*.

Distinguished from Caprifoliaceae, Corneae, and the other orders in the neighbourhood, by the position of the stamens before the petals. Mr Brown suggests their relation to Proteaceae.—The berries contain a viscid matter, that is insoluble in water and alcohol. The bark is usually astringent. The well known Mistletoe of the oak is the *Viscum album*. *Loranthus tetrandrus* (the *Lonicera corymbosa* of authors), is used in Chili for dyeing black.

Order 95. *Caprifoliaceae*. Juss.

Calyx with its limb 5- (very rarely 4-) lobed. Corolla of one piece, lobed, sometimes irregular; the divisions alternate with those of the calyx: estivation not valvate

(D. C). Stamens equal in number to the lobes of the corolla (or sometimes one of them abortive), alternating with them, and inserted towards its base: filaments subulate: anthers ovate, bilocular. Ovarium cohering with the tube of the calyx, three-celled (rarely four or five-celled): ovules few in each cell, pendulous: style one, exserted, or none: stigmas as many as the cells, either distinct or combined into one capitate stigma. Fruit crowned by the limb of the calyx, fleshy, or rarely almost dry, plurilocular, or one-celled (either by the disappearance of the dissepiments, or by the abortion of the other cells). Seeds solitary, in pairs, or several (some often abortive) in each cell, pendulous. Embryo straight, in the centre of a fleshy albumen: radicle superior, next the hilum.—Shrubs. Leaves opposite without stipules (or rarely with two small stipules or glands at the base of each petiole). Flowers terminal, corymbose, or axillary.—Ex. *Sambucus*, *Viburnum*, *Lonicera*, *Linnaea*.

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Tribe 1. *Sambuceae*. KUNTH. Corolla regular, rotate, seldom tubular: style none: stigmas three, sessile; raphe on the inner side of the ovule.

Tribe 2. *Lonicereae*. R. BROWN. Corolla more or less tubular, often irregular: style filiform: raphe on the outer side of the ovule. (Br.)

In *Sambucus* and *Viburnum* the testa of the seed is membranous, but the endocarp is bony: in *Lonicera* and *Triosteum* the testa itself is bony; and care must be had to distinguish whether the bony part belong to the carpel or the seed. This order bears a striking relation to the Rubiaceae; it is also allied to the Apocynae.—The flowers of the elder (*Sambucus nigra*) are fragrant and sudorific, but the leaves emetic and purgative. The fruit of *Viburnum* has an austere astringent pulp, which becomes eatable after fermentation. The honeysuckle is a purgative.

Order 96. *Rubiaceae*. JUSS.

Tube of the calyx adherent with the ovary, the limb variable, truncate, or lobed, consisting of as many sepals as petals, rarely with accessory intermediate teeth. Petals 4-5, rarely 3-8, united, inserted upon the summit of the tube of the calyx: estivation twisted or valvate. Stamens as many as the lobes of the corolla, alternate with them (rarely some of them suppressed): filaments more or less combined with the tube: anthers oval, two-celled, turned inwards: pollen elliptical. Ovarium adherent, usually two-celled, or with several cells, rarely (by abortion) one-celled, crowned by a fleshy urceolate disc: style single, sometimes partly divided: stigmas usually two, rarely several, distinct, or more or less concrete. Fruit a cremocarpium, or capsular, or baccate, or drupaceous, two or many-celled. Seeds one or many in each cell, in the former case attached to the apex, or more usually to the base of the cell; in the latter to a central placenta. Albumen horny or fleshy, copious. Embryo straight or slightly curved, inclosed in the albumen: radicle turned to the hilum: cotyledons foliaceous.—Leaves simple, entire, opposite (very rarely verticillate): stipules two at the base of each leaf, entirely distinct, or cohering either with the leaf or with each other, or both ways; their apex sometimes produced into setae, sometimes into foliaceous expansions, resembling verticillate leaves.—Ex. *Cinchona*, *Gardenia*, *Hedyotis*, *Isertia*, *Hamelia*, *Cordia*, *Guetarda*, *Paderia*, *Coffea*, *Spermacoce*, *Anthospermum*, *Rubia*, *Opercularia*.

The above thirteen genera have been taken by De Candolle¹ as the types of as many tribes, but our limits do

¹ Prodr. Syst. Regn. Veg. vol. iv. p. 342.

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not permit us to give the characters. The Rubiaceæ are allied to the Caprifoliaceæ, to Valerianæ, Dipsacæ, and Compositæ; but perhaps it was with the Apocynæ and Gentianæ that they were most generally confounded, previous to the separation of the Loganiaceæ. *Houstonia*, referred still by De Candolle to the Gentianæ, has an inferior (adherent) ovary, interpetiolar stipules, a bilocular polyspermous capsule, and seeds not winged, and consequently must be arranged here, at the end of the Hedyotideæ.—The roots (as in *Rubia* or the Madder) sometimes yield an excellent red dye; in others they are acrid, emetic, purgative, or diuretic. The bark (as in *Cinchona* or Peruvian bark) is sometimes bitter, tonic, astringent, and aromatic, and eminently powerful in intermittent fevers. The horny albumen of the *Coffea Arabica* is what is roasted, and made use of, under the name of Coffee; and it is probable that such other seeds, of this order, as have a horny albumen, might be used as a substitute. The fruit of a few is succulent and eatable.

Order 97. *Valerianæ*. JUSS.

Calyx with a limb of various kinds, either membranous, or resembling a pappus. Corolla inserted into the top of the ovary, tubular, usually five-lobed, rarely 3-4-lobed, lobes obtuse; tube equal, or gibbous, or spurred, at the base. Stamens 1-5, inserted into the tube of the corolla, and alternate with its lobes: anthers ovate, two-celled. Ovary cohering with the tube of the calyx (inferior), 1-3-celled: ovule solitary, pendulous: style filiform: stigmas 1-3, distinct or combined. Fruit dry, indehiscent, crowned with the limb of the calyx, one-celled, or three-celled (two being abortive). Seed solitary, pendulous. Albumen none. Embryo straight: radicle superior: cotyledons flat.—Leaves opposite, exstipulate.—Ex. *Patrinia*, *Valeriana*.

Most intimately connected with Dipsacæ, but distinct by having no albumen, and by the absence of an involucre.—The roots of several are tonic, bitter, vermifuge, and antispasmodic; and some seem to be even febrifugal. The smell is disagreeable, although esteemed in some countries: thus the *Nardostachys Jatamansi* is the spike-nard of the ancients. The young leaves of *Valerianella olitoria* make a good spring salad.

Order 98. *Dipsacæ*. JUSS.

Calyx with a limb short or elongated, entire, or toothed, or papose. Corolla inserted on the apex of the tube of the calyx, tubular, limb oblique, 4-5-lobed, rarely ringent: estivation imbricated. Stamens four, inserted on the tube of the corolla, alternate with its lobes, almost always distinct: anthers two-celled. Ovary cohering with the tube of the calyx, either closely, or only by the apex, or at first free and afterwards cohering, one-celled: ovule solitary, pendulous: style filiform: stigma simple. Fruit dry, indehiscent, crowned by the limb of the calyx, usually covered by an outer calyx or involucre, one-celled. Seed solitary, pendulous. Embryo straight, in the axis of a fleshy albumen: radicle superior.—Leaves opposite, very rarely verticillate, variable in shape on the same plant. Flowers densely capitate, or very rarely verticillate.—Ex. *Morina*, *Scabiosa*.

The involucre to each flower in this order is of a very singular kind, and may be distinguished into three parts: the *base*, or the lower portion; the *tube*, which is furnished with several deep furrows or grooves; and the *crown*, or the portion above the grooves,—the modifications of which are well suited for generic characters. This family is most allied to the Calyceræ and Valerianæ. The teasel (the head of *Dipsacus fullonum*) is used by fullers in dressing cloth.

Div. II.—*Dichlamydeæ Calycifloræ*. D. C.

(5. *Epicorollæ Synantheræ*.)

Order 99. *Calyceræ*. R. BROWN.

Calyx with a limb of five unequal segments. Corolla regular, funnel-shaped, with a long slender tube and a five-lobed limb; the lobes with three principal veins. Stamens five, inserted on the tube, with as many alternating glands inserted a little below them: filaments united: anthers introrse, partially connate. Ovary cohering with the tube of the calyx, crowned by a disc, one-celled: ovule solitary, pendulous: style single, smooth: stigma capitate. Fruit an achenium, crowned by the rigid teeth of the calyx. Seed solitary, pendulous. Embryo in the axis of a fleshy albumen: radicle superior.—Herbaceous plants. Leaves alternate, exstipulate. Flowers sessile, capitate, surrounded by an involucre: sometimes the ovary mutually cohere into one mass.—Ex. *Calycera Boopis*.

In this, the preceding order, and the following, the flowers are sometimes termed florets, and the whole capitulum a flower; but this is incorrect. From Compositæ this order is easily known, by the radicle being superior.

Order 100. *Compositæ*. ADANSON.

Limb of the calyx either wanting or membranous, and divided into bristles, paleæ, or hairs, and called pappus. Corolla monopetalous, five-toothed or lobed, tubular, or ligulate, or bilabiate, inserted on the top of the ovary, alternate with the lobes, which have each two marginal nerves: estivation valvate. Stamens five, alternate with the teeth of the corolla: filaments distinct: anthers connate (very rarely free), erect, articulated with the filaments. Ovary cohering with the tube of the calyx, one-celled: ovule solitary, erect: style single: stigmas two, distinct or united. Fruit an achenium, crowned with the limb of the calyx. Seed solitary, erect. Albumen none. Radicle inferior.—Leaves alternate or opposite, usually simple, exstipulate. Flowers bi- or unisexual, capitate, surrounded by a many-leaved involucre (*bracteoles*), the scales of which are sometimes also interspersed with the flowers on the receptacle, and are then called *paleæ*.—Ex. *Carduus*, *Centaurea*; *Achillea*, *Artemisia*; *Trixis*, *Chaetanthera*; *Sonchus*, *Heiracium*.

Of this there are four principal groups: 1. *Cynarocephalæ*, where the flowers are all tubular, the receptacle hairy or pitted, the style swollen and furnished with hairs below the stigma: 2. *Corymbifereæ*, where the external flowers are usually ligulate, and the inner ones tubular: 3. *Labiatifloræ*, where the flowers have two deep unequal lips to the corolla: 4. *Cichoraceæ*, where all the flowers are ligulate. Various subdivisions have been also attempted, but their limits are hitherto very unsettled.—All the Compositæ are bitter. The Cynarocephalæ are some of them stomachic, others febrifugal, and others sudorific and diaphoretic; but the bitter principle is not found in the unexpanded leaves or receptacle. The Corymbifereæ possess tonic, stomachic, and febrifugal qualities; some are sudorific, others diuretic: the roots of *Helianthus tuberosus*, or the Girasole (*vulgo* Jerusalem) artichoke, are eatable. The Cichoraceæ have usually a milky, bitter, astringent, and narcotic juice, which induces sleep; but before this is formed, many of the species may be used as articles of food.

Div. II.—*Dichlamydeæ Calycifloræ*. D. C.

(6. *Pericorollæ*. JUSS.)

Order 101. *Brunoniaceæ*. R. BROWN.

Calyx five-partite, with four bracteas at its base, persistent: tube very short, afterwards enlarged. Corolla in-

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serted in the base of the calyx (truly hypogynous?): monopetalous, infundibuliform, nearly regular, marcescent: tube ultimately split at the back, with the primary nerves opposite its divisions: limb five-partite, the upper segments most deeply divided; nerves central, dividing at the top into two recurrent marginal branches: estivation valvular. Stamens five, inserted with, but free from, the corolla, alternating with its segments: filaments very short, distinct: anthers connate, erect, articulated with the filaments, bilocular, bursting longitudinally. Ovarium free, one-celled: ovule solitary, erect: style single: stigma single, inclosed in a two-valved cup (indusium). Fruit a utricle, inclosed in the indurated tube of the calyx. Seed one, erect. Albumen 0. Embryo straight: radicle small, inferior: cotyledons fleshy, plano-convex.—Herbaceous plants, without stems. Leaves radical, exstipulate. Flowers capitate, on a scape: heads surrounded by an involucre of enlarged bractæ.—Ex. *Brunonia*.

Very nearly allied indeed to the Dipsacæ and Compositæ, but having the ovary free. We do not feel quite certain that the corolla is hypogynous, having observed a kind of disc at the base of the calyx, to which it seemed attached; but although it were so, it would be impossible to remove this order from the side of the Goodenoviæ. The habit is that of the Globularinæ. Perhaps this and the three following ought to be made suborders of one great order.

Order 102. *Goodenoviæ*. R. BROWN.

Calyx five-cleft, sometimes 5-3-partite, sometimes obsolete, equal, or rarely unequal, persistent. Corolla inserted into the calyx, sometimes at its base; monopetalous, more or less irregular, marcescent or deciduous: its tube split at the back, and sometimes separable into five petals when the ovary is almost free: its limb five-partite, with one or two lips, the edges of the segments being thinner than the middle: primary nerves of the tube alternate with the divisions; the thick part of the lobes with lateral nerves: estivation valvate. Stamens five, distinct, inserted with, but free from, the corolla, alternate with its lobes: anthers distinct or cohering, continuous with the filaments, two-celled, bursting longitudinally: pollen simple or compound. Ovarium more or less cohering with the tube of the calyx, 1-2 or four-celled, sometimes with a gland between the two anterior filaments: ovules erect: style one, simple (rarely divided): stigma fleshy, simple, or two-lobed, surrounded by a membranous cup. Fruit various. Seeds erect, definite or indefinite: testa thick, sometimes bony. Embryo straight, inclosed in a fleshy albumen: radicle inferior: cotyledons foliaceous.—Plants without milky juice. Leaves scattered, exstipulate. Flowers distinct, never capitate.

Tribe 1. *Goodeniæ*. R. BROWN. Ovarium of two (rarely four) carpels, 2-4-celled: ovules indefinite: fruit a two or rarely four-celled capsule, septicidal, rarely loculicidal: seeds numerous, attached to the axis.—Ex. *Goodenia*, *Velleia*.

Tribe 2. *Scævoleæ*. R. BR. Ovarium of two or four carpels, 1-2 or four-celled: ovules solitary in each carpel: fruit indehiscent, drupaceous, or nut-like: seed one, or two (by abortion of the dissepiment), in each cell, attached to the bottom of the cell.—Ex. *Scævola*, *Dampiera*.

The above two tribes, differing little from each other, but agreeing in a multitude of extraordinary characters, we cannot consider even as suborders. We consider the indusium to the stigma as an abortive gynandrous column, both in this order and the last.

Order 103. *Styldiæ*. R. BROWN.

Calyx with 2-6 divisions, bilabiate or regular, persistent. Corolla monopetalous, falling off late: its limb 5-6-partite, irregular, or rarely equal: lobes with a central nerve:

estivation imbricated. Stamens two: filaments longitudinally connate with the style into a column: anthers didymous, rarely simple, lying over the stigma: pollen globular, simple, sometimes angular. Ovarium cohering with the side of the calyx, crowned often with one gland in front or two opposite ones, two-celled, or, by the contraction of the dissepiment, sometimes one-celled: ovules indefinite: style one: stigma entire or bifid. Capsule two-valved, two or one-celled, septicidal. Seeds indefinite, small, erect. Embryo minute, inclosed in a fleshy, somewhat oily albumen.—Plants, destitute of milky juice. Leaves alternate, scattered, or apparently verticillate.—Ex. *Stygidium*, *Forstera*.

The position of the anthers in this order, combined with the tubæ at the base of the style in some of the Campanulacæ, serves to explain the structure of the indusium to the stigma in the two preceding. This family is readily distinguished by the gynandrous stamens, from those in its vicinity.

Order 104. *Campanulacæ*. JUSS.

Calyx usually five-lobed (sometimes 3-8-lobed), rarely entire, persistent. Corolla monopetalous, inserted on the calyx, usually five (sometimes 3-4-6-8) cleft, deciduous or marcescent: lobes with a central principal nerve: estivation valvate. Stamens inserted with the corolla, alternating with its lobes, and equal to them in number: anthers two-celled, distinct or cohering, erect, two-celled, bursting longitudinally. Ovarium cohering, wholly or by its lower half, with the tube of the calyx, of two or more carpels: ovules indefinite: style simple: stigma naked, simple, or with as many lobes as cells to the ovary. Placentæ in the axis of the plurilocular, or parietal in the one-celled ovary. Fruit capsular, one or more celled, loculicidal, dehiscing either by lateral fissures, or by valves at the apex. Seeds indefinite. Embryo straight, in the axis of a fleshy albumen: radicle pointing to the hilum.—Plants, yielding a milky juice. Leaves alternate or rarely opposite, exstipulate.

Tribe 1. *Lobeliæ*. JUSS. Odd segment of the calyx anterior: corolla irregular: anthers cohering: pollen ovate, elongated, smooth, marked by a longitudinal furrow: style glabrous, with a fringe of hairs below the stigma.—Ex. *Lobelia*.

Tribe 2. *Campanulæ*. D. C. Odd segment of the calyx posterior: corolla regular: anthers free, or rarely cohering: pollen spherical, papillose: style pubescent.—Ex. *Campanula*.

The distinguishing characters of these two tribes are perhaps too few to afford ordinal characters. The hairs on the style or under the stigma seem to be intended for the absorption of the vivifying part of the pollen. There is an expansion of the torus (or abortive stamens) at the insertion of the corolla and stamens, and this sometimes not only covers the top of the ovary, but even forms a tube round the style (as in *Adenophora*). The cells of the fruit are usually opposite the calycine segments, rarely alternate with them. In the *Lobeliæ* the odd sepal is really anterior, although by a twist in the pedicel it appears posterior.—The milky juice is acrid, and in some cases poisonous.

Order 105. *Gesneriæ*. RICH. and JUSS.

Calyx five-parted: estivation valvate. Corolla monopetalous, tubular, more or less irregular, five-lobed: estivation imbricate. Stamens four (rarely two), two being longer than the others, with the rudiment of a fifth inserted on the corolla: anthers two-celled, with a thick tumid connectivum. Ovarium partly free, surrounded by glands alternating with the stamens, of two carpels whose margins are introflexed and placentiferous: ovules indefinite: style continuous with the ovary: stigma capitate,

Arrangement and Characters.

Arrange-ment and Characters. concave. Fruit capsular or succulent, one-celled, two-valved, loculicidal. Seeds minute, indefinite: testa thin, finely and obliquely veined. Embryo in the axis of a fleshy albumen: radicle pointing to the hilum.—Leaves opposite, rugose, exstipulate.—Ex. *Gesnera*, *Sarmienta*, *Gloxinia*.

More allied to the Bignoniaceæ, and especially Orobanchæ, from which last order the present is most readily distinguished by the usually adherent ovary: perhaps, as hinted by Richard, the two orders may be conjoined. Being allied, however, to the Orobanchæ, the Gesneriaceæ form a link between the Campanulaceæ and the following order (Monotropæ).

Order 106. *Ericineæ*. Juss.

Suborder 1. *Monotropææ*. Nutt. Calyx 3-4-5-partite, persistent. Corolla monopetalous, regular, deciduous, more or less deeply 4-5-lobed, inserted at the base of the calyx (hypogynous?): estivation imbricated. Stamens inserted with the corolla, twice as many as its lobes, distinct, free from the corolla: anthers two (often imperfectly) celled, dry, opening by fissures or pores, with or without appendages. Torus discoid. Ovary free, 4-5-celled: ovules indefinite: style one: stigma simple, discoid. Fruit capsular, 4-5-celled, 4-5-valved, loculicidal: axis 4-5-lobed. Seeds indefinite, minute: testa long and linear, loose, membranous, largely reticulated with veins: nucleus globose in the centre of the testa. Albumen fleshy. Embryo at one extremity of the albumen, extremely minute.—Herbaceous, or rarely suffrutescent plants. Leaves simple, entire, or toothed, or wanting.—Ex. *Pyrola*, *Monotropa*.

Suborder 2. *Ericææ*. Calyx 4-5-cleft, nearly equal, persistent. Corolla inserted at the base of the calyx (hypogynous?), monopetalous, 4-5-cleft (occasionally separable into four or five petals), regular or irregular, often marcescent: estivation imbricated. Stamens definite, equal in number to the segments of the corolla, or twice as many, distinct, inserted with the corolla, free from it, or attached to its base: anthers two-celled, hard and dry, usually (rarely not) bifid and furnished with some kind of appendages, dehiscing by terminal pores, or rarely by clefts. Torus discoid, or in the form of scales. Ovary free, plurilocular: ovules indefinite, very rarely solitary in each cell: style one, straight: stigma one, entire or toothed. Placentæ central. Fruit capsular or baccate, with several cells, loculicidal, or septicidal. Seeds indefinite, minute, very rarely definite, testa adhering closely to the tegmen and nucleus. Embryo cylindrical, in the axis of a fleshy albumen: radicle next the hilum.—Shrubby or suffrutescent plants. Leaves evergreen, rigid, entire, whorled, or opposite, exstipulate.—Ex. *Erica*, *Arbutus*, *Rhododendrum*, *Andromeda* (Plate CXXIV.)

Suborder 3. *Vacciniææ*. D. C. Calyx entire, or 4-6-lobed. Corolla monopetalous, with as many lobes as the calyx. Stamens distinct, twice as many as the lobes of the corolla: anthers dry, two-celled, deeply bifid, with narrow horn-like lobes. Torus forming a disc round the top of the ovary. Ovary adherent to the tube of the calyx, 4-5-celled: ovules indefinite: style simple: stigma simple. Fruit baccate, crowned by the persistent limb of the calyx, succulent, 4-5-celled. Seeds numerous. Embryo straight, in the axis of a fleshy albumen: radicle long, pointing to the hilum: cotyledons very short.—Ex. *Vaccinium*, *Oxycoccus*.

Suborder 4. *Epacrideææ*. R. Br. Calyx five- (rarely four-) parted, often coloured, persistent. Corolla inserted at the base of the calyx (hypogynous?), deciduous or marcescent, monopetalous, sometimes separable into five petals; limb five (rarely four), divided, sometimes by the cohesion of the segments, bursting transversely: estivation imbricated or valvular. Stamens as many as, and al-

ternate with, the segments of the corolla, rarely fewer, inserted with or on the corolla: anthers dry, simple, entire, without appendages, bursting longitudinally: pollen round or three-lobed, attached to a single central receptacle. Torus in the form of scales. Ovary sessile, free, plurilocular (rarely uni-) locular: ovules solitary or indefinite: style one: stigma simple, or sometimes toothed. Fruit drupaceous, baccate, or capsular. Embryo slender, straight, in the axis of a fleshy albumen, and about half its length.—Shrubs or small trees. Leaves usually alternate, exstipulate.—Ex. *Epacris*, *Styphelia*.

Between Monotropææ and Ericææ there is no certain character but in the testa of the seed; the mode by which the anthers dehisce being variable in both, even although we exclude *Pyrola*, as has been already done by Don. Ericææ is usually described with indefinite ovules; but *Cyrtilla*, usually referred here, has them solitary in each cell. Between Ericææ and Vacciniææ no character can be given, farther than the ovary free or adherent: the habit of several species in both is the same. Between Ericææ and Epacrideææ, again, there is almost nothing but the structure of the anthers and a difference of habit; we therefore consider them all as suborders. As a whole, it is difficult to say what are the affinities. In some points they slightly approach to the Campanulaceæ, and in others to the Saxifrageæ (Escalloniææ and Cunoniææ).—Their general properties are astringent and diuretic. The berries of the succulent fruited species are mostly grateful and eatable: the Bilberries, Cranberries, Bearberries, &c. belong to this family. The fruit of the *Arbutus unedo* (so called because one was sufficient) is, however, exceedingly disagreeable.

Order 107. *Columelliæææ*. Don.

Calyx turbinate; limb persistent, five-lobed, or multi- (10-11-) partite. Corolla perigynous, rotate, 5-8-lobed: estivation convolute. Stamens two, inserted in the throat of the corolla: anthers linear, sinuous, and one-celled, or straight and two-celled. Torus expanded into a perigynous disc. Ovary cohering with the tube of the calyx, two-celled: ovules indefinite (Don): style simple, declinate: stigma capitate. Fruit capsular, two-celled, two-valved, septicidal, each valve often splitting at the apex. Seeds indefinite, ascending: testa coriaceous, smooth. Embryo straight, in the axis of a fleshy albumen: radicle pointing to the hilum.—Leaves opposite, entire, exstipulate. Flowers solitary, yellow.—Ex. *Columella*, *Menodora*.

A very little known order, lately established, and imperfectly characterised. Thus, Don says of *Menodora*, that the ovary is adherent (inferior), and the ovules indefinite; while Kunth, and Bonpland, who formed the genus, says the stamens are hypogynous, the ovary superior, and the ovules only two in each cell. The nearest affinity of this order is with Styracineæ, Jasminaceæ, and Ebenaceæ.

Order 108. *Symploceææ*. Juss.

Calyx monosepalous, limb entire or divided, persistent. Corolla perigynous or rarely hypogynous (?), monopetalous, regular: estivation imbricated or valvate. Stamens definite or indefinite, inserted into the tube of the corolla, unequal, mono- or polyadelphous at their base. Ovary cohering with the tube of the calyx either entirely or in part, or free, three, four, or five-celled: ovules four in each cell, of which two are ascending and two suspended: style simple: stigma simple: placentæ central. Fruit surrounded by or inclosed in the calyx, being a carcerulus, or a one- (by abortion) celled, three-valved, loculicidal, coriaceous capsule. Seeds usually solitary in the capsule, or in each cell of the carcerulus, erect or suspended: testa membranous or bony. Embryo straight, in the axis of a fleshy albumen: radicle pointing to the hilum: cotyledons

ange- flat, foliaceous.—Trees or shrubs. Leaves alternate, ex-
stipulate.—Ex. *Styrax*, *Symplocos*, *Ciponima*, *Halesia*.
Characters. In *Styrax* there is usually but one bony seed, but that
genus, although the corolla be certainly perigynous, is by
some referred with *Strigilia* to the Meliaceæ. Don asserts
that *Halesia* forms a very distinct group, so that the pre-
sent order would thus consist of *Symplocos*, to which
Kunth joins *Ciponima*, of which the characters are how-
ever still less understood than the other two. It may be
therefore considered as a dubious order, of which the
genera chiefly agree in the position of the ovules.—*Storax*
and benzoin are derived from the genus *Styrax*.

DIV. III.—*Dichlamydeæ Corollifloræ*. D. C.

(7. Hypocorollæ.¹ Juss.)

Order 109. *Ebenaceæ*. VENT.

Flowers uni- (rarely bi-) sexual. Calyx 3-6-divided,
nearly equal, persistent. Corolla monopetalous, regular,
deciduous, somewhat coriaceous, 3-6 divided: estivation
imbricated. Stamens inserted on the corolla, or hypogy-
nous, definite (two or four times as many as the segments
of the corolla, and rarely of the same number when they
alternate with them), filaments usually in two rows: an-
thers erect, linear-lanceolate, two-celled, bursting longitu-
dinally. Ovary free, sessile, plurilocular: ovules one
or two in each cell, pendulous: style divided, rarely sim-
ple: stigmas simple or bifid. Fruit fleshy, round or oval,
the pericarp sometimes opening regularly. Seeds few: testa
membranous. Embryo straight, nearly in the axis
of a cartilaginous albumen: radicle next the hilum: coty-
ledons foliaceous.—Trees or shrubs, without milky juice.
Leaves coriaceous, alternate, exstipulate.—Ex. *Diospyrus*,
Ferreola.

Allied to the Symplocæ, to the Sapotæ, and several
others that we have placed in the neighbourhood.—The
fruit is eatable, but the chief peculiarity of this order con-
sists in the extreme hardness of its wood. Ebony and
iron-wood both belong to it.

Order 110. *Ricineæ*. BRONGNIART.

Sepals 4-6: estivation imbricated. Corolla monopeta-
lous, hypogynous, 4-5-partite: estivation imbricated. Sta-
mens inserted into the base of the corolla, alternate with
its lobes, and equal to them in number: filaments straight:
anthers introrse. Torus not discoid. Ovary free, fleshy,
somewhat truncate, 2-6-celled: ovules solitary, pendulous
from a cup-shaped funiculus: stigma nearly sessile, lobed.
Fruit fleshy, indehiscent, containing from two to six one-
seeded nucules. Seed suspended. Embryo small, lying
at the end next the hilum of a large fleshy albumen: ra-
dicle superior: cotyledons small.—Trees or shrubs. Leaves
coriaceous, alternate, or opposite.—Ex. *Ilex*, *Prinos*.

Separated by Brongniart from the Celastrineæ. They
are much allied to the Ebenaceæ.—The leaves of some
species are used as tea. The bark and berries of others
are tonic, astringent, and antiseptic.

Order 111. *Sapotææ*. Juss.

Flowers bisexual. Calyx divided, regular, persistent.
Corolla hypogynous, deciduous, monopetalous, regular, its
lobes usually equal to, rarely twice or thrice as many as,
those of the calyx. Stamens inserted on the corolla, defi-
nite, distinct; the fertile ones as many as (rarely more than)
the segments of the calyx, with which they alternate; the
sterile ones between them rarely wanting. Ovary pluri-
locular: ovules solitary, erect: style one: stigma simple,
sometimes lobed. Fruit fleshy, plurilocular, or, by abor-

tion of the dissepiments, one-celled. Seeds solitary, erect: Arrange-
ment and Characters. testa bony, shining. Embryo large, erect, white, usually
inclosed in a fleshy albumen, which, however, is some-
times wanting: radicle short, straight, or slightly curved,
turned towards the hilum: cotyledons foliaceous (in the
albuminose seeds), or fleshy (in the exalbuminose seeds).
—Trees or shrubs, with copious milky juice. Leaves co-
riaceous, entire, alternate, exstipulate.—Ex. *Achras*, *Lu-
cuma*.

Closely allied to the Ebenaceæ, from which, however,
they differ by their having milky juice, bony seeds, bi-
sexual flowers, and various other important characters.—
The fruit of many, as the star-apple, the sappodilla plum,
and others, is much prized in their native countries. The
bark of some species of *Achras* is astringent and febrifugal.

Order 112. *Myrsineæ*. R. BROWN.

Flowers bisexual, rarely unisexual. Calyx 4-5-cleft,
persistent. Corolla monopetalous, hypogynous, 4-5-cleft,
equal. Stamens 4-5, inserted into the corolla, and oppo-
site its segments: filaments distinct, rarely connate, short,
sometimes wanting, with sometimes five sterile petaloid
alternating ones: anthers sagittate, erect, two-celled,
bursting longitudinally. Ovary free, one-celled: ovules
definite or indefinite, peltate, immersed in the placenta:
style one: stigma simple or lobed. Placenta free, central,
fleshy. Fruit fleshy. Seed usually solitary, sometimes
2-4, peltate: hilum concave: testa membranous, incorpo-
rated with the tegmen. Albumen horny. Embryo slen-
der, slightly curved, heterotropous (or lying across the
hilum): radicle horizontal when the seed is solitary, or
inferior when there are several seeds: cotyledons short.—
Trees or shrubs, rarely suffrutescent. Leaves coriaceous,
exstipulate, usually alternate.—Ex. *Myrsine*, *Ardisia*.

Allied to Sapotæ, but particularly to Primulaceæ in
the structure of the fruit, though with a very different
habit.—Bread is prepared from the pounded seeds of
Theophrasta Jussiei in St Domingo.

Order 113. *Jasminaceæ*.

Suborder 1. *Jasmineæ*. Juss. Flower bisexual. Calyx
divided or toothed, persistent. Corolla hypogynous, mono-
petalous, regular, hypocrateriform, 5-8-divided: estiva-
tion imbricated and twisted. Stamens two, inserted on
the corolla, inclosed within its tube: anthers two-celled,
bursting longitudinally. Ovary free, two-celled: ovules
solitary, rarely in pairs, at first pendulous, afterwards erect:
style one: stigma two-lobed. Fruit a double berry, or
pyxidium, or a bivalved capsule. Seeds usually solitary,
rarely in pairs, erect. Albumen none, or very thin. Em-
bryo straight: radicle inferior.—Shrubs, with usually twin-
ing stems. Leaves opposite, pinnate.—Ex. *Jasminum*, *Bo-
livaria*.

Suborder 2. *Oleineæ*. HOFFM. and LINK. Flowers
bisexual, or sometimes unisexual. Calyx gamosepalous,
divided, persistent. Corolla hypogynous, gamopetalous,
and four-cleft, sometimes of four petals, connected in
pairs by the intervention of the filaments, rarely wanting:
estivation somewhat valvate. Stamens two, alternate
with the segments of the corolla: anthers two-celled,
bursting longitudinally. Ovary free, two-celled: ovules
in pairs, collateral, pendulous: style one or none: stig-
ma entire or bifid. Fruit drupaceous, baccate, or capsu-
lar. Seeds often by abortion solitary. Albumen dense,
fleshy, abundant. Embryo straight, about half the length
of the albumen: radicle superior: cotyledons foliaceous.—
Trees or shrubs. Leaves opposite.—Ex. *Olea*, *Ligustrum*,
Fraxinus.

¹ Such orders as Brunoniaceæ, &c. which have the insertion of the corolla doubtfully hypogynous, but the stamens free from it, we,
with De Candolle, have referred to the Peripetalæ. Plumbaginæ, however, we have retained.

These two suborders are so very much allied that few separate them. *Bolivaria* has two seeds in each cell, and thus partakes of the character of both. In both the radicle points to the hilum. Their affinities extend on the one side to the Ebenaceæ and Columelliaceæ, and on the other to the Verbenaceæ.—The flowers are usually fragrant. The bark of the olive and ash is astringent and highly febrifuge. Olive oil is expressed from the pericarp, the oil of Jasmine from the flowers.

Order 114. *Asclepiadeæ*. R. BROWN.

Calyx five-divided, persistent. Corolla hypogynous, gamopetalous, regular, five-lobed, deciduous: estivation contorted-imbricate: rarely valvate. Stamens five, inserted into the base of the corolla, and alternate with its segments: filaments usually connate: anthers two-celled, each cell sometimes divided by incomplete septa: pollen, when the anther bursts, coalescing into masses which are as numerous as the cells, or sometimes confluent by pairs, and sticking to the five processes of the stigma, either by twos, by fours, or singly. Ovaria two: ovules indefinite: styles two, close to each other, often very short: stigma one, common to both styles, dilated, with five corpusculiferous angles. Placentas at the ventral sutures. Follicles two (sometimes one by abortion). Seeds indefinite, imbricate, pendulous, usually with a coma at the hilum. Albumen thin. Embryo straight: radicle superior: cotyledons foliaceous.—Plants, with usually a milky juice, often twining. Leaves entire, usually opposite, with interpetiolar ciliæ instead of stipules.—Ex. *Asclepias*, *Stapelia*.

Separated by Mr Brown from the Apocynæ on account of the very remarkable structure of the anthers and stigma.—The milky juice is usually acrid and bitter, and must always be regarded with suspicion, even although it seems in some few species to be used as aliment. The roots are generally acrid and stimulating; some few are diaphoretic and sudorific. The root and bark of the mudar plant (*Calotropis Mudara*), is a powerful purgative and alterative; and an extract, a new principle, called *mudarinc*, has the singular property of diliquescing by cold and congealing by heat.

Order 115. *Apocynææ*. JUSS.

Calyx five- rarely four-divided, persistent. Corolla hypogynous, gamopetalous, regular, five- rarely four-lobed, deciduous: estivation contorted-imbricate, rarely valvate. Stamens five, rarely four, inserted on the corolla, alternate with its lobes: filaments distinct: anthers two-celled, bursting longitudinally: pollen granular, globose, or three-lobed, immediately applied to the stigma. Ovaria two and each one-celled, or one and bilocular: ovules usually indefinite, rarely solitary or few: styles two or one: stigma one. Fruit follicular, or capsular, or baccate, or drupaceous, double or single. Seeds indefinite or rarely definite: albumen fleshy, cartilaginous, or horny, rarely wanting. Embryo foliaceous: radicle pointing to the hilum.—Plants, with usually a milky juice. Leaves entire, generally opposite, without stipules, but with interpetiolar ciliæ or glands.—Ex. *Apocynum*, *Vinca*, *Strychnos*.

We have now entered upon a group to be distinguished with great difficulty, so much do the orders run into each other; and indeed more than one botanist have suggested that the Rubiaceæ, Apocynææ, Loganiaceæ, and Gentianeæ, may form one class. Gentianeæ, however, touches upon Scrophularineæ, and this again on various others, so that we scarcely know what limits to impose on the series. *Strychnos*, *Carissa*, and some others, have been separated by Jussieu as a distinct order, having a simple fruit, and peltate seeds without a coma. To this, perhaps, *Gardnera* belongs, having a quaternary divided flower, valvate corolla, like *Strychnos*, simple fruit, and ecomose seeds. But then, some still referable to Apocynææ have a simple fruit

and comose seeds, others a double fruit and ecomose seeds, all of which might as well be made orders; besides, we doubt if, by having only one stigma, the ovarium ought to be ever considered as different from a syncarpous one.—The milk seems still more deleterious than that of the last order, being known to be used as food in only two plants. The root of some is poisonous, in others cathartic; in some the bark has these properties, in others the fruit. One seed of the Tanghin tree of Madagascar is sufficient to poison twenty persons. The nux-vomica is prepared from the seeds of the *Strychnos*. Of some species the bark is febrifugal.

Order 116. *Loganiaceæ*. R. BROWN.

Suborder 1. *Loganieæ*. Calyx quinque-partite. Corolla hypogynous, regular, or irregular: estivation convolute. Stamens inserted on the corolla, five or one (and therefore not corresponding with the divisions of the corolla): anthers bilocular, bursting longitudinally: pollen marked by three bands (MARTIUS). Ovarium free, two-celled: ovules indefinite: style continuous: stigma simple. Fruit either a two-celled capsule, with placentæ finally becoming loose; or a nuculanum with one or two-seeded nucules. Seeds peltate: testa finely reticulated, sometimes winged. Albumen fleshy or cartilaginous. Radicle turned towards the hilum.—Leaves entire, opposite, usually with interpetiolar sheathing stipules.—Ex. *Logania*, *Gartneria*.

Suborder 2. *Potalieæ*. MARTIUS. Calyx 4-5-6-partite. Corolla hypogynous, regular, 5-10-divided (not corresponding with the segments of the calyx): estivation contorted-convolute. Stamens inserted on the corolla: pollen elliptical, simple. Ovarium free: style continuous: stigma simple. Placentæ central, four-lobed. Fruit succulent, two- (or spuriously four-) celled. Seeds indefinite, peltate: testa and tegmen distinct. Albumen cartilaginous. Embryo heterotropous (MART.).—Trees or shrubs. Leaves entire, opposite, with interpetiolar sheathing stipules.—Ex. *Potalia*, *Fagraea*.

Suborder 3. *Spigeliææ*. MARTIUS. Calyx quinque-partite, regular. Corolla hypogynous, five-lobed: estivation valvate. Stamens five, inserted into the corolla: pollen triangular, the angles globular. Ovarium free, two-celled: ovules few: style articulated with the ovarium: stigma simple. Fruit capsular, two-celled, two-valved, septicidal, valves separating from the central placenta. Seeds few, nearly definite, small. Albumen copious, fleshy. Embryo very minute: radicle next the hilum.—Leaves entire, opposite, with stipules or a tendency to produce them.—Ex. *Spigelia*.

The genera of these three suborders have perhaps no very great affinity with each other. Some have been lopped off the Apocynææ, some taken from the Gentianeæ, others from the Rubiaceæ. All botanists now agree that they are osculating eccentric plants; and we have therefore brought them all here under the head of Loganiaceæ. Their general character lies in the free, two-celled ovary, and opposite stipulate leaves.—Their properties seem to be bitter, like the Gentians: some are acrid and emetic like the Apocynææ. The root of *Spigelia marilandica* is vermifuge, and in large doses cathartic.

Order 117. *Gentianeæ*. JUSS.

Calyx gamosepalous, usually 5- (sometimes 4-6-8 or 10-) divided, persistent. Corolla hypogynous, gamopetalous, usually regular, marcescent, or deciduous: limb divided into as many lobes as the calyx: estivation imbricate-twisted. Stamens inserted upon the corolla, alternate with the segments, and equal to them in number, some of them occasionally abortive: pollen three-lobed or triple. Ovarium single, of two carpels, the edges of which are either slightly inflexed, or meet in the axis, hence

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1-2-celled: ovules indefinite: style one, continuous: stigmas one or two. Fruit capsular or fleshy, one-celled, usually two-valved, septicidal, or rarely (in *Menyanthes*) loculicidal. Seeds small, indefinite. Embryo straight, in the axis of a soft fleshy albumen: radicle next the hilum.—Leaves exstipulate, opposite, and entire (in *Menyanthes* and *Villarsia*, usually alternate, toothed, or divided).—Ex. *Gentiana*, *Chlora*.

From an examination of very imperfectly ripe fruit, we had concluded that the capsule of *Villarsia* was loculicidal, and thought ourselves confirmed by Brown, "Valvularum axibus seminiferis." But Gärtner and others assert the contrary: otherwise this character might serve to remove both *Menyanthes* and *Villarsia*, and form a distinct suborder. Martius says that the two carpels of the Gentianeæ are right and left, and not anterior and posterior; but certainly the one is (at all events where the quinary arrangement holds) opposite to the odd sepal, and the other to the odd petal, which again, with regard to the bractea, appear to us anterior and posterior. The torus presents a disc or gland in *Tachia* and *Villarsia*.—The Gentianeæ are intensely bitter; and this renders them, without exception, tonic, stomachic, and febrifugal.

Order 118. *Bignoniaceæ*. Juss.

Suborder 1. *Bignoniæ*. Calyx divided or entire, sometimes spathaceous. Corolla hypogynous, usually irregular, 4-5-lobed. Stamens five, unequal (one and sometimes three of them being sterile): anthers two-celled. Torus discoid. Ovarium superior, one or two-celled, each cell being often spuriously divided: ovules indefinite: style one: stigma bilamellate. Capsule one or two-celled, sometimes spuriously two or four-celled, two-valved. Seeds transverse, compressed, winged. Albumen none. Embryo straight, foliaceous: radicle next the hilum.—Trees or shrubs, or rarely herbaceous. Leaves opposite or rarely alternate, exstipulate.—Ex. *Bignonia*, *Spathodea*, *Eccremocarpus*.

Suborder 2. *Didymocarpeæ*.¹ Don. Calyx five-divided, equal. Corolla tubular, irregular, five-lobed, more or less bilabiate: estivation imbricate. Stamens four, didynamous (two sometimes sterile), rarely with the rudiment of a fifth: anthers two-celled, bursting longitudinally. Torus an annular disc. Ovarium superior, one-celled, of two carpels, the contiguous introflexed margins of which diverge, and form two or four spurious cells: ovules indefinite: style filiform: stigma two-lobed or bilamellate, or infundibuliform and entire. Fruit succulent, or capsular or siliquose, and two-valved. Seeds indefinite, small, ovate, or cylindrical, suspended, apterous, sometimes with a coma. Albumen none. Embryo straight: radicle next the hilum.—Usually herbaceous, sometimes shrubby plants. Leaves in general opposite, or radical.—Ex. *Didymocarpus*, *Cyrtandra*, *Fieldia*.

Suborder 3. *Pedalineæ*. R. BROWN. Calyx five-divided, nearly equal, rarely spathaceous. Corolla irregular, the tube ventricose, the limb five-lobed, bilabiate. Stamens four, didynamous (two sometimes sterile), with the rudiment of a fifth: anthers bilocular. Torus a glandular disc. Ovarium one or two-celled, of two carpels, the introflexed margins of which, by splitting and diverging, constitute several spurious cells: ovules few in each spurious cell: style one: stigma bilamellate or 2-4-cleft. Fruit drupaceous, or rarely capsular and two-valved, spuriously many-celled. Seeds few, large, apterous; pendulous, erect, or transverse. Albumen none. Embryo

straight, next the hilum.—Herbaceous plants. Leaves opposite.—Ex. *Pedaliium*, *Sesamum*.

Most botanists now agree that these three form but one order. The true *Incarvillea* has winged and perhaps transverse seeds, and belongs to Bignoneæ; while other species, by some united to it, have pendulous, apterous seeds, and belong to Didymocarpeæ. *Ramondia* is referred to Didymocarpeæ by Martius, but we know of none who has examined the mature seeds. If these be exalbuminose, then the character of the order may be slightly altered for its reception; in the mean time, on account of the anthers dehiscing by terminal pores, we refer it to the Solaneæ. *Bignonia* seems to have a one-celled fruit, with a transverse septum or projection from its parietal placentæ. *Arragoa* is too imperfectly known for any one to judge of its place. The Bignoniaceæ are nearly allied to Scrophularineæ and Solaneæ, but have no albumen.—Nothing almost is known of their medical properties.

Order 119. *Polemoniideæ*. Juss.

Suborder 1. *Cobææ*. Don. Calyx foliaceous, five-cleft, equal. Corolla campanulate, equal, limb five-lobed: estivation imbricate. Stamens five, equal, inserted on the base of the tube: anthers entire, two-celled. Torus large, discoid, five-angular. Ovarium free, simple, of three carpels, one-celled (spuriously three-celled, by means of the placentæ of each carpel being introflexed and attached to the sides of a solid triangular centre axis): ovules indefinite, ascending: style simple: stigma trifid. Capsule somewhat fleshy, spuriously three-celled, three-valved, septicidal: placentæ attached to the central axis, and separating from the valves. Seeds flat, winged, ascending, in a double row. Albumen thin, fleshy, soft. Embryo straight, large: radicle cylindrical, pointing to the hilum, inferior: cotyledons broad, compressed, cordate.—Climbing diffuse shrubs. Leaves alternate, pinnate, terminated by a tendril.—Ex. *Cobæa*.

Suborder 2. *Polemoniæ*. Juss. Calyx five-divided, persistent, sometimes irregular. Corolla regular, rarely irregular, five-lobed. Stamens five, inserted on the middle of the tube of the corolla, and alternate with its segments. Anthers entire. Torus discoid, lobed. Ovarium free, of three carpels, three-celled, or one-celled (and spuriously three-celled by the introflexed placentæ being united with a triangular central axis): ovules ascending: style simple: stigma trifid. Capsule three-celled, or spuriously so, three-valved, loculicidal: placentæ in the axis, and separating from the valves. Seeds few or numerous, angular or oval, often enveloped in mucus, ascending, in a single row. Embryo straight, in the axis of a horny albumen: radicle inferior, next the hilum; cotyledons elliptical, foliaceous.—Herbaceous, erect plants. Leaves opposite or alternate, simple or variously divided.—Ex. *Polemonium*, *Phlox*, *Bonplandia*.

This order borders very close on the Bignoniaceæ, especially *Cobæa*, in which genus, had the seeds been attached to the margins of the valves, and consequently the septa been merely projections of the placentæ, as in *Bignonia*, we should have referred it to that order, notwithstanding the trifid stigma, and the presence of some albumen. On the other side, Polemoniideæ are allied to Convolvulaceæ, but from this the shape of the embryo is sufficient to distinguish them.

Order 120. *Hydroleaceæ*. R. BROWN.

Calyx five-parted, persistent: estivation imbricated. Corolla regular, not always agreeing with the calyx in

¹ On account of its priority, we have adopted this name, instead of Cyrtandraceæ given to these plants by Dr Jack. Jack's paper was read in May 1822, and published long afterwards in the 14th volume of the *Linnean Transactions*; Don's was read on 26th January 1822, and published in July that same year.

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the number of its divisions: estivation plicate or imbricate. Stamens five, inserted on the corolla, equal: anthers deeply lobed at the base, two-celled. Torus an annular disc. Ovary free, 2-3-celled: ovules indefinite: styles two or three: stigmas incrassated. Fruit capsular, 2-3-celled, loculicidal. Seeds indefinite, very small. Embryo straight, in the axis of a fleshy albumen: radicle next the hilum: cotyledons flat.—Leaves alternate, exstipulate, often covered with glandular or stinging hairs.—Ex. *Hydrolea*, *Diapensia*.

Almost exactly intermediate between Polemoniaceæ and Convolvulaceæ; like the former, having the placenta often adhering to the axis and separating from the valves, and principally differing in the plurality of styles. From Convolvulaceæ the dehiscence of the capsule, the number of seeds, the albumen, and flat cotyledons, will distinguish them.

Order 121. *Convolvulaceæ*. Juss.

Calyx five-divided, persistent. Corolla deciduous, regular, five-lobed: estivation usually plicate. Stamens five, inserted on the base of the corolla, alternate with its segments. Torus discoid. Ovary free, of two, three, or four carpels, usually syncarpous, rarely apocarpous, usually with two, three, or four cells, rarely by abortion one-celled: ovules erect, definite; when more than one, collateral: style one, sometimes entire, usually bifid, rarely two: stigmas obtuse or acute. Capsule 1-4-celled, septifragal and septicidal; sometimes without valves, or a pyxidium. Seeds at the base of the placenta. Albumen mucilaginous. Embryo curved: radicle inferior: cotyledons corrugated, rarely inconspicuous.—Herbaceous plants or shrubs, usually twining and with a milky juice. Leaves alternate, exstipulate.—Ex. *Convolvulus*, *Falkia*, *Cuscuta*. (Plate CXIX.)

Cuscuta, from its having no leaves developed, has, as may be presumed, no conspicuous cotyledons. Analogy, however, enables us to assert that they do exist, although in an abortive state. In *Cuscuta* the calyx and corolla are sometimes four-lobed, the stamens four. *Dichondra* and *Falkia*, usually described as with apocarpous ovaria, ought rather, by analogy, to be considered as syncarpous, with a deeply-divided style.—An acrid, purgative, milky juice abounds in the roots: the Jalap and Scammony are obtained from those of species of *Convolvulus*. The roots of *C. batatas* (or sweet potato) and *C. edulis* are eaten.

Order 122. *Cordiaceæ*. R. BROWN.

Calyx five- (rarely four-) toothed. Corolla with the limb 5-4- (rarely 10-) cleft. Stamens inserted on the corolla, alternate with its segments: anthers versatile. Ovary free, four-celled: ovule solitary: style continuous: stigma four-cleft. Fruit with a fleshy epicarp; sarcocarp bony, four-celled (some of them occasionally abortive). Seed erect, attached to a long funiculus that proceeds from the apex of the cell to the base. Albumen none. Radicle superior: cotyledons plaited longitudinally.—Trees. Leaves alternate, scabrous, exstipulate. Flowers paniced.—Ex. *Cordia*, *Varronia*.

Perhaps not distinct from Boraginaceæ, but somewhat allied to Convolvulaceæ by the plaited cotyledons.—The flesh of the fruit is mucilaginous and emollient. The *Sebesten* plums are produced by *Cordia Myxa* and *C. Sebestena*.

Order 123. *Boraginaceæ*. Juss.

Suborder 1. *Ehretieæ*. MART. Calyx five-parted: estivation imbricate. Corolla tubular, limb five-divided: estivation imbricated. Stamens five, inserted on the base of the corolla, alternate with its segments: anthers erect. Torus an annular disc. Ovary free, simple, two or four celled: ovules four, suspended: style terminal: stigma simple, two-lobed. Fruit a nuculanum. Seeds four, sus-

ended, some occasionally abortive. Albumen very thin and fleshy, or wanting. Embryo straight or curved: radicle next the hilum: cotyledons plano-convex.—Trees or shrubs. Leaves alternate, scabrous, or harshly pubescent, exstipulate. Flowers in corymbose spikes, or panicles.—Ex. *Ehretia*, *Tournefortia*.

Suborder 2. *Heliotropiceæ*. MART. Calyx five-parted, persistent. Corolla regular, five-lobed: estivation imbricate. Stamens inserted on the tube of the corolla, alternate with its segments: anthers erect. Torus discoid. Ovary free, entire, or two-lobed, four-celled: ovules four, pendulous: style terminal or between the lobes, simple: stigma simple or bifid. Fruit dry, separable into four achenia. Seed pendulous, solitary. Albumen none, or very thin and fleshy. Radicle minute, next the hilum, superior: cotyledons fleshy, plano-convex, or convolute.—Somewhat shrubby or herbaceous plants. Leaves alternate, scabrous, exstipulate. Flowers in terminal, fasciculated or corymbose spikes.—Ex. *Heliotropium*, *Tiaridium*, *Coldenia*.

Suborder 3. *Borageæ*. Calyx five-divided, persistent. Corolla regular, five-cleft: estivation imbricate. Stamens inserted on the corolla, alternate with its segments: anthers erect. Ovary four-lobed, four-celled: ovules four, each suspended from the inner angle and near the summit of the cell: style simple, arising from the base of the lobes of the ovary: stigma simple or bifid. Fruit a microbasis, separable into four achenium-like, or two bilocular bony, portions. Seed suspended. Albumen none. Radicle superior, short: cotyledons plano-convex.—Herbaceous plants or shrubs: stem terete. Leaves alternate, scabrous, exstipulate. Flowers usually spicate.—Ex. *Borago*, *Myosotis*.

There is scarcely any good character between these. The first may be best distinguished by its fleshy fruit, the last by the fruit being a microbase, and the second by the fruit being dry and yet not a microbase. In the *Borageæ*, as may be easily seen in *Cerithe*, a placenta, or rather a conducting thread, passes up through the sarcocarp at the inner angle of each part of the fruit, and enters the cell between the middle and the summit, bearing the seeds, which are thus suspended, not erect as some botanists say. In *Tiaridium* the fruit has two divaricating lobes, between which the style is inserted: a cord passes from its base along the middle of each lobe, to near the apex, where it enters each cell, forming a double placenta. *Coldenia* seems to have a thin albumen, and somewhat convolute cotyledons. The *Ehretieæ*, on account of the fleshy fruit, formed part of the original family of *Sebesteniæ* (*Cordiaceæ*) of Ventenat. Although we have termed the fruit in all these four-celled, it, however, consists only of two cells, each of which is divided into two by an incrassation and inflexion of the dorsal nerve. A fifth part is sometimes suppressed from the calyx, corolla, and stamens.—The *Borageæ* are mucilaginous and emollient. Some contain nitrate of potash, which gives a coolness to the beverage in which their leaves are steeped. The roots of others give out a reddish brown dye.

Order 124. *Hydrophyllææ*. R. BROWN.

Calyx five- or ten-divided, persistent. Corolla regular or nearly so, five-lobed, with two lamellæ towards the base of each constituent petal. Stamens alternate with the lobes of the corolla: anthers ovate, two-celled, versatile, bursting longitudinally. Ovary free, simple, one-celled: ovules definite or indefinite, suspended: style terminal, bifid: stigmas two. Placenta two, parietal, or on stalks from the base of the cavity. Fruit capsular, one-celled, two-valved, loculicide. Seeds definite or indefinite. Embryo small at the umbilical extremity of a copious cartilaginous albumen: radicle superior.—Herbaceous his-

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pid plants. Leaves opposite, or alternate and lobed.—

Ex. *Hydrophyllum*, *Phacelia*.

Closely allied to Boraginæ, from which Mr Brown separated them in the *Prodromus Floræ Nov. Holl.*, and in the appendix to Franklin's *Overland Expedition*. What are termed here stalked placenta, are, we suspect, the parietal placenta detached from the back of each valve, but remaining attached to the base of the cell.

Order 125. *Solanæ*. Juss.

Calyx five- (rarely four-) parted, persistent. Corolla with the limb five- (rarely four-) cleft, regular, or somewhat unequal, deciduous: estivation plicate, or in some imbricate. Stamens inserted on the corolla, alternate with its segments, sometimes one abortive: anthers bursting longitudinally or by terminal pores. Ovarium two or more celled, rarely one-celled: ovules usually indefinite: style continuous: stigma obtuse, rarely lobed. Fruit either a capsule, which is 2-4-celled, 2-4-valved, and septicidal, or opening transversely with a double dissepiment; rarely one-celled, two-valved, the margins introflexed, and bearing the placenta; or a 2-4-celled berry, with the placenta adhering to the dissepiment; or a nuculanum, with five or more nucules which have spurious one or more cells with one seed in each. Seeds sessile. Embryo more or less curved, often eccentric, lying in a fleshy albumen: radicle next the hilum.—Herbaceous plants or shrubs. Leaves alternate.—Ex. *Solanum*, *Nicotiana*; *Nolana*; *Verbascum*, *Anthocercis*.

Allied to both Convolvulaceæ and Boraginæ, with which last, and also with Hydrophyllæ, it has sometimes been proposed to associate *Nolana*: this genus, indeed, merits being made into a suborder. As to *Verbascum*, *Ramondia*, *Celsia*, *Anthocercis*, and *Duboisia*, they have the habit of the Solanæ, but the imbricate corolla, unequal stamens, and almost straight embryo, of the Scrophularinæ; and if they are not conjoined with these, and the character of the present order thus made more rigorous, we cannot point out a decided distinguishing character between the two families. *Ramondia* has a unilocular fruit. *Triguera* seems to have an irregular, plicate corolla, and the fruit a tetrachenium; but this genus is little known.—Upon the whole, the leaves of the Solanæ are narcotic and acrid: those of *Verbascum*, however, and probably of the others with an imbricate corolla, are mucilaginous. The roots are usually poisonous. The fruit is also in general very poisonous, although, whether by the effects of cultivation, or some peculiarity in the plants themselves, that of the Love-apple, Tomato, Capsicum, and a few others, are eaten without inconvenience. The tubers formed on the potato-plant are, when boiled, highly alimentary. The dominant property of these vegetables is their stupifying action, which is usually joined to an acrid principle. The *νυκτερινός* of Homer (*Od.* iv. l. 221), supposed by some to be the poppy, seems rather to be the *Hyoscyamus*, which has still a similar name applied to it in some eastern languages.

Order 126. *Orobanchæ*. VENT.

Calyx divided, persistent. Corolla irregular, usually bilabiate, persistent: estivation imbricated. Stamens four, didynamous. Torus a fleshy disc. Ovarium free, one-celled, of two carpels, whose edges are sometimes slightly introflexed and divaricated: ovules indefinite: style one: stigma two-lobed. Fruit capsular, inclosed within the withered corolla, one-celled, loculicide. Seeds indefinite, minute. Embryo very minute, lodged in a lateral hollow near the apex of a fleshy albumen.—Herbaceous, leafless, parasitical plants.—Ex. *Orobanche*, *Lathræa*.

Richard, and Nuttall (under his genus *Epiphagus*), describe the embryo situated as above: Gærtner, how-

ever, figures it in *Lathræa* at the base of the albumen; but the character is too minute to be of much use. This order approaches very close to the following, from which, however, it is easily distinguished; and also to the Gesneriaceæ.—*Orobanche major* is powerfully astringent.

Order 127. *Scrophularinæ*. Juss.

Calyx divided, unequal, persistent. Corolla usually irregular and bilabiate or personate, deciduous: estivation imbricate. Stamens usually four, didynamous, rarely equal, sometimes two. Torus discoid. Ovarium free, two-celled: ovules definite or indefinite: style simple: stigma two-lobed, rarely entire. Fruit capsular (rarely fleshy), two-celled (rarely, by the obliteration of the dissepiments, one-celled), 2-4-valved, loculicidal or septicidal: dissepiment distinctly double, or apparently single. Placenta central in maturity, either remaining attached to the dissepiment, or becoming loose. Seeds definite or indefinite. Embryo straight, included within a fleshy albumen.—Herbaceous, seldom shrubby, plants. Leaves usually opposite.—Ex. *Veronica*, *Erimus*, *Scrophularia*, *Rhinanthus*, *Melampyrum*.

After Brown, we unite the Pediculares of Jussieu to the Scrophularinæ, the two kinds of dehiscence of the capsule being found sometimes in the same genus. Richard, in 1828, proposed to make use of another character, viz. the direction of the embryo, which he supposes to be orthotropous in the true Scrophularinæ, and heterotropous or inverted in the Pediculares or Rhinanthaceæ. Mr Lindley has therefore lately availed himself of this structure. But the only genera we can discover with a heterotropous embryo are, *Rhinanthus*, *Melampyrum*, and *Pedicularis*; *Euphrasia* and *Bartsia*, so allied to them, having it orthotropous. In the above three the embryo is minute, while in all the others it occupies a great part of the length of the albumen.—This family presents no great uniformity in its properties; the greater number, nevertheless, containing a principle more or less acrid, purgative in *Gratiola* and some *Scrophulariæ*, but so powerful in *Digitalis purpurea* (the fox-glove), that this plant is very poisonous unless in small doses. *Euphrasia* is slightly astringent and aromatic, without the deleterious qualities of the other genera.

Order 128. *Labiata*. Juss.

Calyx tubular, regular, or bilabiate, persistent. Corolla bilabiate; upper lip entire or bifid, lower three-cleft: the upper in estivation overlapping the lower. Stamens four, didynamous (two being sometimes abortive), inserted on the corolla, alternate with the lobes of the lower lip: anthers two-celled, sometimes apparently one-celled, either by the obliteration of the septum, or by the abortion of a cell. Ovarium free, deeply four-lobed: ovules four: style one, proceeding from the base of the lobes: stigma bifid, usually acute, sometimes unequal or dilated. Fruit a microbasis, separable into four achenia. Seeds erect, some of them occasionally abortive. Albumen none, or very thin. Radicle inferior: cotyledons flat.—Herbaceous or suffrutescent plants, with quadrangular stems. Leaves opposite, exstipulate.—Ex. *Salvia*, *Teucrium*, *Scutellaria*.

The Labiata approach to the Boraginæ, and also to the Verbenaceæ. The leaves are full of little utricles of oil.—Two principles are found in these plants; the one aromatic and stimulant owing to the abundance of the essential oil, the other bitter; and, according as the one or the other predominates, so they are cordial, sudorific, and antispasmodic, or tonic and stomachic. The order contains no dangerous plants.

Order 129. *Verbenaceæ*. Juss.

Suborder 1. *Myoporinæ*. R. BROWN. Calyx five-parted, persistent. Corolla nearly equal, or bilabiate. Stamens four, didynamous, with the rudiment of a fifth some-

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Suborder 2. *Verbenææ*. Calyx tubular, persistent. Corolla tubular, deciduous, limb usually irregular. Stamens four, didynamous, rarely equal, sometimes only two. Ovary free, 2-4-celled: ovules four, erect, rarely pendulous, and then becoming erect after fecundation: style one: stigma bifid or entire. Fruit an osteocarpium, or nuculanum, or a tetrachenium (the epicarp being sometimes extremely thin). Seeds erect, four, or by abortion three or one. Albumen none, or very thin. Embryo straight: radicle inferior.—Trees or shrubs, rarely herbaceous plants. Leaves usually opposite, exstipulate.—Ex. *Verbena*, *Vitex*, *Avicennia*.

Suborder 3. *Selaginææ*. Juss. Calyx tubular, rarely of two sepals, persistent. Corolla tubular; limb five-lobed, irregular. Stamens four, usually didynamous, seldom only two, inserted on the top of the tube of the corolla: anthers one-celled. Ovary free, very minute: style one, filiform. Fruit membranous, two-celled, one cell often abortive. Seed solitary in each cell, erect. Embryo in the axis of a fleshy albumen: radicle superior, at the opposite extremity from the hilum.—Herbaceous or shrubby plants. Leaves alternate, exstipulate.—Ex. *Selago*, *Hebenstreitia*.

These have a somewhat similar habit, and only differ from each other by very minute characters. Through *Verbena* they are allied to the last order; and through *Selaginææ* to both *Scrophularinææ* and *Acanthaceææ*.—Their properties are of little importance; the Vervein has long since fallen into disrepute; and the fruit of the *Vitex Agnus-castus*, being hot and aromatic, may be expected to produce a contrary effect from that from which the plant derived its name. The bark of *Avicennia tomentosa* is used in Brazil for tanning. The Teak-tree of East India belongs to this family.

Order 130. *Acanthaceææ*. Juss.

Calyx 5-4-divided, equal or unequal, rarely either multifid or entire and obsolete, persistent. Corolla mostly irregular, with the limb ringent or bilabiate, or occasionally with one lip, sometimes nearly equal, deciduous. Stamens mostly two, sometimes with other two or three shorter ones, two of which are sometimes fertile: anthers either two-celled or one-celled, bursting longitudinally. Torus a glandular disc. Ovary free, two-celled: ovules two or many in each cell: style one: stigma two-lobed or entire. Placentæ in the axis. Capsule two-celled, elastically two-valved, loculicidal. Seeds two or many in each cell, sometimes by abortion solitary, ascending, usually subtended by rigid subulate persistent ascending processes from the placentæ: testa loose. Albumen none. Embryo curved or straight: radicle cylindrical, descending, next the hilum: cotyledons large, foliaceous.—Herbaceous plants or shrubs. Leaves opposite, exstipulate. Flowers with three (or by abortion two) bractæas to each.—Ex. *Acanthus*, *Justicia*.

The flowers, as in *Thunbergia*, have sometimes large bractææ inclosing an obsolete calyx. They approach the *Scrophularinææ* in habit, and *Bignoniaceææ* in character, from which it is extremely difficult to separate those genera that want the hooked processes of the placentæ.—*Acanthus mollis* is considered emollient. The properties of the other genera of this order are almost unknown.

Order 131. *Lentibulariææ*. RICHARD.

Calyx divided, persistent. Corolla irregular, bilabiate,

with a spur. Stamens two, included within the corolla, arranged and inserted into its base: anthers one-celled, sometimes contracted in the middle. Ovary free, of two carpels, one-celled: ovules indefinite: style one, very short: stigma unequally bilamellate. Placentæ central, erect, globular. Fruit capsular, one-celled, opening transversely, or by a longitudinal cleft at the apex. Seeds minute. Albumen none. Embryo with two (sometimes inconspicuous) cotyledons.—Herbaceous, marsh or water plants, or parasites. Leaves radical, often abortive. Flowers on scapes.—Ex. *Pinguicula*, *Utricularia*.

These are most closely allied to the *Scrophularinææ*, from which they are distinguished by the ovary being one-celled, or, in other words, by the inflexed part of the carpellary leaves being at an early age obliterated. The large, central, free placenta allies them to the *Primulaceææ*; but these have more than two carpellary leaves and a copious albumen.

Order 132. *Primulaceææ*. Juss.

Calyx five- (rarely four-) cleft, regular, persistent. Corolla hypogynous, rarely perigynous, with the limb regular, five- (rarely four-) cleft, rarely wanting. Stamens inserted upon the corolla or hypogynous, equal in number, and opposite to its segments. Ovary free (rarely with its base adherent to the calyx), one-celled, of five (rarely four) carpels: ovules indefinite: style one: stigma capitate. Placentæ central, free. Capsule opening by valves, or a pyxidium. Seeds numerous, peltate. Embryo straight, cylindrical, inclosed within a fleshy albumen, transverse, or rarely in the axis.—Herbaceous plants. Leaves usually opposite.—Ex. *Primula*, *Trientalis*.

Closely allied through the last order to *Scrophularinææ* and the other *Hypocorollææ*; to *Myrsinææ* however it has the greatest affinity, from which it is best known by its capsular and not fleshy fruit. *Samolus* has the ovary only partly free, and has five sterile stamens alternate with the fertile ones, but cannot be confounded with any of the *Pericorollææ* if we consider the structure of the fruit and seed. *Glaux* has no petals, but the stamens are still alternate with the sepals; Don has united it with the *Plantaginæææ* on account of the embryo being in the axis of the albumen; but the stamens are erect in estivation, and the fruit one-celled.—The Cowslip is slightly narcotic, and the root of the *Cyclamen* acrid; but little is known about their properties.

Order 133. *Globularinæææ*. D. C.

Calyx five-cleft, usually equal, sometimes bilabiate, persistent. Corolla tubular, five-parted, bilabiate, or rarely of one lip. Stamens four, somewhat didynamous, inserted into the top of the tube of the corolla, alternate with the segments of the lower lip: anthers reniform, one-celled. Ovary free, one-celled: ovule solitary, pendulous: style filiform, persistent: stigma bifid. Fruit indehiscent. Seed pendulous. Embryo straight, in the axis of a fleshy albumen: radicle superior.—Shrubby or herbaceous plants, with perennial roots. Leaves alternate. Flowers capitate, on a paleaceous bracteated receptacle.—Ex. *Globularia*.

Jussieu and De Candolle considered this allied to the *Primulaceææ*. Cambessedes has lately demonstrated their affinity with the *Verbenaceææ* (*Selaginæææ*), and more particularly with the *Dipsaceæææ*. Perhaps they ought to be placed in the vicinity of the *Brunoniaceæææ* and *Goodenoviææææ*, with which last they agree in the irregular corolla: but in the *Dipsaceææææ* and these two the torus surrounds the ovary, and either appears on its surface in the shape of a disc, or incloses the style and forms a cup under the stigma, whereas here it is almost imperceptible at the bottom of the calyx.—Bitter, tonic, and purgative.

Order 134. *Plumbaginææææ*. Juss.

Calyx tubular, persistent: estivation plicate: corolla

gamopetalous, or of five distinct petals, regular. Stamens five, hypogynous when the petals are combined, inserted into the base of the petals when distinct. Ovarium free, one-celled: ovule solitary, pendulous from the extremity of an umbilical cord arising from the bottom of the cell: styles five, seldom three or four, each bearing a subulate stigma. Fruit a utricle. Seed pendulous: testa and tegmen combined. Embryo straight, in the axis of a farinaceous albumen: radicle superior.—Herbaceous or suffrutescent plants. Leaves alternate or fasciated, somewhat sheathing at the base. Flowers panicled, either loosely or in a capitate manner.—Ex. *Plumbago*, *Statice*, *Armeria*.

Jussieu and De Candolle consider the calyx as a kind of involucre, and the petals as a perianth, probably on account of other points of resemblance between this order and Nyctagineæ, in which there is no corolla.—The genus *Plumbago* is caustic and acrid. *Statice* is tonic and astringent.

Order 135. *Plantagineæ*. Juss.

Sepals four (rarely three), somewhat unequal, persistent: estivation imbricate. Corolla tubular, with a four- (rarely three-) parted limb, scarious, persistent. Stamens four, inserted into the tube of the corolla, or its base, alternate with its segments: filaments long, filiform, doubled inwards before fecundation: anthers versatile, two-celled. Torus inconspicuous. Ovarium free, two- seldom four- and very rarely one-celled: ovules solitary, in pairs, or indefinite: style simple capillary: stigma hispid, simple or rarely bifid. Fruit a pyxidium, inclosed within the persistent corolla. Seeds sessile, peltate or erect: testa mucilaginous. Embryo in the axis of a fleshy albumen: radicle inferior.—Herbaceous and generally stemless plants. Flowers bisexual in spikes, or unisexual and solitary, the male on a long peduncle, the female sessile.—Ex. *Plantago*, *Littorella*.

We agree with Brown and some others, that this has a true calyx. In the genus *Plantago*, the filaments, although only freed from the corolla in their upper part, really have the same origin as the corolla, but are adnate to its tube.—The Plantains are bitter, astringent, and slightly febrifugal.

Div. IV.—*Monochlamydeæ*. D. C.

(8. Hypostamineæ. Juss.)

Order 136. *Nyctagineæ*. Juss.

Perianth tubular, coloured, contracted in the middle, becoming indurated at the base; limb entire or toothed: estivation plicate. Stamens definite, hypogynous: anthers two-celled. Torus a glandular disc. Ovarium free, one-celled: ovule solitary erect: style one; stigma one. Fruit a caryopsis, inclosed within the enlarged persistent tube of the perianth. Embryo rolled round a farinaceous albumen: radicle inferior: cotyledons foliaceous.—Leaves opposite, rarely alternate. Flowers with an involucre, which is either common or proper, one or many-leaved, or sometimes minute.—Ex. *Mirabilis*, *Boerhaavia*.

The nearest affinity of this order is with Plumbagineæ, but particularly with Polygoneæ: it is, however, very distinct from either. The genus *Mirabilis*, that word being an adjective, ought to be called *Nyctago*.—The root of the Marvel of Peru, and most others of this family, is purgative.

Order 137. *Amaranthaceæ*. Juss.

Perianth 3-5-partite, scarious, persistent, with usually two bracteoles at the base. Stamens as numerous as the segments of the perianth, distinct, or united into a membranous cup or tube, occasionally partly abortive, often with intermediate barren filaments or processes: anthers two-celled or one-celled. Ovarium single, free, one-celled: ovules solitary or several, suspended from a free cen-

tral funiculus: style one or none. Stigma simple or compound. Fruit an utricle or a pyxidium, rarely a berry. Seeds lentiform, pendulous: testa crustaceous. Embryo curved round a central farinaceous albumen: radicle near the hilum.—Herbaceous plants or shrubs. Leaves opposite or alternate, exstipulate. Flowers capitate or in spikes, usually bisexual.—Ex. *Amaranthus*, *Gomphrena*, *Deeringia*.

Closely allied in many respects to the Illecebreæ: nor is it easy to point out any general distinguishing character. Martius supposes the bracteoles to be a true calyx, and the perianth a corolla.—The leaves are mucilaginous. This order is chiefly cultivated for its showy flowers.

Div. IV.—*Monochlamydeæ*. D. C.

(9. Peristamineæ. Juss.)

9. Peristamineæ.

Order 138. *Chenopodeæ*. D. C.

Perianth ebracteate, deeply divided, sometimes tubular at the base, persistent: estivation imbricate. Stamens inserted into the base of the perianth, or sometimes hypogynous opposite its segments, and equal to them in number, occasionally fewer. Ovarium single, free, or sometimes cohering with the tube of the perianth, one-celled: ovule solitary, attached to the base of the cell: style 2-4-divided: stigmas simple. Fruit indehiscent, membranous, inclosed in the calyx, which becomes often enlarged or fleshy. Seed erect or resupinate. Embryo curved, placed round a farinaceous albumen, or spiral, or doubled together without albumen: radicle next the hilum.—Leaves alternate, sometimes opposite, exstipulate. Flowers bi- or unisexual.—Ex. *Chenopodium*, *Atriplex*.

Very difficult to be distinguished by a character from the last order, although usually with a habit very different.—Some, as the Spinage, are used as pot-herbs: of others, the root, as of the Beet, is eaten.—Many possess an essential oil. The *Salsola*, *Salicornia*, and others, yield much soda.

Order 139. *Phytolaccaceæ*. R. BROWN.

Suborder 1. *Phytolaccæ*. Perianth 2-4-5-partite. Stamens inserted into the base of the perianth, indefinite, or as few as the segments of the perianth, alternate with them. Ovarium of one or several carpels, syncarpous or apocarpous: ovule one in each carpel, ascending: styles equal to the number of the carpels, terminal in the simple ovary, lateral in the apocarpous: stigmas simple or divided. Fruit baccate or dry, indehiscent. Seeds solitary, ascending. Embryo curved round a mealy (rarely a fleshy) albumen: radicle next the hilum.—Leaves alternate, exstipulate, often with pellucid dots.—Ex. *Phytolacca*, *Rivina*, *Giskia*, *Theligonum*.

Suborder 2. *Petiveriæ*. Ag. Perianth 4-5-partite. Stamens perigynous, indefinite; or, if occasionally equal in number to the leaves of the perianth, alternate with them. Ovarium one, free, one-celled: ovule solitary, erect: style one, lateral: stigma simple or penicillate. Fruit dry, one-celled, indehiscent. Seed erect. Albumen 0. Embryo straight: radicle inferior: cotyledons convolute.—Leaves alternate, often dotted, with minute deciduous stipules (in *Petiveria*).—Ex. *Petiveria*, *Sequiera*.

We do not see why these ought to be separated; their habit is precisely the same. *Microtea* and *Ancistrocarpus*, both with albumen, approach closely to *Petiveria* by the prickles on the fruit. *Rivina* also exhibits a tendency to have the cotyledons convolute. We have joined to them *Theligonum*, although with an oily and somewhat fleshy albumen. De Candolle and Richard do not separate this family from Chenopodeæ.—*Phytolacca decandra* is a purgative: its root is emetic, as also is a spirit distilled from its berries: but a tincture from them seems to be much

esteemed for chronic rheumatism. The leaves are acrid; but young shoots, when boiled, are used instead of asparagus.

Order 140. *Polygonææ*. Juss.

Suborder 1. *Persicariææ*. Flowers solitary. Perianth divided: estivation imbricate. Stamens definite, inserted into the bottom of the perianth: anthers bursting longitudinally. Ovary one, free: ovule solitary, erect: styles or stigmas several. Fruit a nut, naked, or covered by the enlarged perianth. Seed erect. Albumen farinaceous, rarely very thin and fleshy. Embryo usually on one side of the albumen: radicle superior.—Herbaceous, rarely shrubby plants. Leaves alternate, sheathing at the base, or adhering there to intrafoliaceous stipules, revolute when young. Flowers often unisexual.—Ex. *Polygonum*, *Rumex*.

Suborder 2. *Eriogonææ*. Flowers bisexual, collected in a campanulate involucre. Perianth campanulate, six-cleft: estivation imbricate. Stamens nine, inserted into the bottom of the perianth: anthers bursting longitudinally. Ovary one, free: ovule solitary, erect: stigmas three. Fruit an achenium, covered by the persistent perianth. Seed erect. Albumen farinaceous. Embryo straight, in the axis of the albumen: radicle superior, remote from the hilum.—Herbaceous plants. Leaves alternate, usually tomentose, neither sheathing nor with intrafoliaceous stipules.—Ex. *Eriogonum*.

The erect ovule and superior radicle will distinguish this at once from the two last orders. The second suborder contains, in addition to *Eriogonum*, an allied genus from South America, in which the segments of the involucre terminate in spiny processes, and the fruit is lenticular, although with a triangular beak.—In almost all the species the root and young leaves have an astringent and acid taste, the first owing to the presence of tannin and gallic acid, the second to oxalic acid, which makes them rank among tonic medicines. The roots of some, as the rhubarb, possess, in addition, a purgative property. The seeds of all, with the exception of those of *Polygonum hydropiper*, which are hot and acrid, may be used as food, like those of most other orders with a copious farinaceous albumen.

Order 141. *Begoniæææ*. R. BROWN.

Flowers unisexual. Perianth coloured; of four or sometimes 3-9 in the males, or 5-6 in the females, tepals or leaves, of which some are smaller than the others: estivation imbricate. Stamens indefinite, distinct, or united into a solid column: anthers collected in a head, continuous, clavate, two-celled, bursting longitudinally, with a very thick connectivum. Ovary coherent with the tube of the perianth, of three carpels, each with the dorsal nerve winged, three-celled: ovules indefinite: stigmas three, sessile, two-lobed, somewhat spirally twisted. Placentæ in the axis. Fruit membranous, capsular, triangular, three-celled, loculicide (bursting at the angles) below. Seeds indefinite: testa thin, reticulated. Albumen 0. Embryo oblong: radicle next the hilum.—Herbaceous or suffrutescent plants. Leaves alternate, oblique at the base, with scarious stipules.—Ex. *Begonia* (Plate CXVIII.)

Closely allied to the *Polygonæææ* in several respects, but distinguishable from them by a multitude of characters: some slight relation they also bear to *Loasæææ* and *Onagraræææ*. Mr Lindley once considered them as having affinity with *Saxifragæææ* (*Hydrangæææ*), and Link places them near *Umbelliferæææ*.—The leaves and young shoots are acid, and may be used, like those of the rhubarb, for tarts. The roots are astringent and slightly bitter.

Order 142. *Laurinæææ*. Juss.

Perianth 4-6-cleft, the limb sometimes obsolete: esti-

vation imbricate. Stamens perigynous, definite, opposite to the segments of the perianth; more often twice as many, and in two rows, in which case the outer row is almost always fertile, while such of the inner row as are opposite the inner segments of the perianth are sterile: filaments of the inner row often with glands at their base: anthers 2-4 celled, cells opening by a longitudinal persistent valve from the base to the apex, outer row introrse, inner row extrorse. Ovary single, free or rarely adherent, one-celled: ovule solitary, pendulous: style one: stigma obtuse. Fruit fleshy, naked, or covered by the enlarged and fleshy perianth. Seed one, pendulous. Albumen none. Radicle short, superior: cotyledons large, usually plano-convex and peltate near the base, rarely convolute: plumule conspicuous, two-leaved.—Trees. Leaves exstipulate, alternate, or seldom opposite. Sometimes twining, parasitic, suffrutescent, or herbaceous plants, without leaves.—Ex. *Laurus*, *Cassia*.

Perhaps *Gyrocarpus*, having an adherent ovary, a drupe with two winged processes at its apex, and convolute petiolate cotyledons, ought to form a small suborder. The *Laurinæææ* are allied to the *Berberidæææ* and *Monimæææ* by their valvular anthers.—Cinnamon, camphor, benzoin, and sassafras, are the products of this family: indeed all the species are aromatic, warm, and stomachic.

Order 143. *Hernandiææææ*. BLUME.

Perianth petaloid, tubular, 4-8-parted, deciduous, with a small involucre or outer perianth around the flowers that contain pistils. Stamens perigynous definite, in two rows, of which the outer is often sterile: anthers bursting longitudinally. Ovary free, one-celled: ovule pendulous: style one or none: stigma peltate. Fruit a fibrous drupe. Seed solitary, pendulous. Albumen none. Radicle superior: cotyledons somewhat lobed, shrivelled, oily.—Trees. Leaves alternate, entire.—Ex. *Hernandia*, *Inocarpus*.

Allied to *Laurinææææ* and *Myristicææææ*, differing from the former by its anthers, from the latter by its want of albumen. Mr Lindley has also explained its affinity to the *Thymelæææææ*.—The bark, young leaves, and seed of *Hernandia*, are slightly purgative. The seeds of the *Inocarpus* are eaten, and have a taste similar to chestnuts.

Order 144. *Myristicæææææ*. R. BROWN.

Flowers unisexual. Perianth trifold, in the female deciduous: estivation valvular. Stamens 3-12 (definite): filaments combined closely into a cylinder: anthers connate or distinct, two-celled, extrorse, bursting longitudinally. Ovary free, sessile, one-celled: ovule solitary, erect: style very short: stigma somewhat lobed. Fruit baccate, one-celled, two-valved. Seed solitary, erect, nut-like, covered by a deeply laciniated arillus. Albumen ruminated, between fatty and fleshy. Embryo small, at the base of the albumen. Radicle inferior: cotyledons foliaceous: plumule conspicuous.—Trees, with often a red juice. Leaves alternate, exstipulate, coriaceous, not dotted.—Ex. *Myristica* (Plate CXX.)

Mr Brown remarks that the stamens or anthers, however numerous, are always a multiple of the number of the segments of the perianth, and therefore definite.—The use of the mace or arillus, and albumen, of the nutmeg, is well known, as highly aromatic. The bark, however, has an acrid juice, and the fleshy part of the fruit is caustic.

Order 145. *Proteacæææææ*. Juss.

Perianth more or less deeply 4-divided: estivation valvular. Stamens perigynous, four (one sometimes sterile), opposite the segments of the perianth: anthers two-celled, bursting longitudinally. Ovary solitary, free, sessile or stalked, one-celled: ovules solitary, or rarely in pairs: style simple: stigma discoid, slightly oblique. Fruit dehiscent or indehiscent, one-celled. Seed sometimes winged: testa thick. Albumen none. Embryo straight:

radicle inferior, and below the hilum: cotyledons sometimes more than two.—Shrubs or small trees. Leaves hard, dry, opposite or alternate, exstipulate.—Ex. *Protea*, *Banksia*, *Perseonia*.

A very distinct order, and scarcely to be confounded with any other.—They are handsome evergreens, much prized by gardeners, but of no use except as firewood.

Order 146. *Elæagnææ*. Juss.

Perianth tubular, the limb entire or 2-4-toothed; consisting, in purely stamiferous flowers, of 3-4 tepals; persistent. Stamens three, four, or eight, alternate with the segments of the perianth: anthers nearly sessile, two-celled, erect, bursting on the inner side and longitudinally. Ovary free, one-celled: ovule solitary, ascending, on a short funiculus: style short: stigma simple, subulate, glandular. Fruit a crustaceous achenium, inclosed within the persistent, enlarged, and fleshy tube of the perianth. Seed ascending. Embryo straight, surrounded by a thin fleshy albumen: radicle short, inferior: cotyledons fleshy.—Trees or shrubs. Leaves simple, entire, alternate or opposite, exstipulate, covered beneath with leprous scales. Flowers diœcious or rarely bisexual.—*Elæagnus*, *Hippophaë*.

This order is allied to several in the neighbourhood, and also to Combretaceæ.—The fleshy enlarged perianth of several species is eaten.

Order 147. *Penæacææ*. R. BROWN.

Perianth coloured, more or less deeply 4-divided, regular, persistent. Stamens perigynous, four (or eight, and then the four additional ones are longer than the others), alternate with the segments of the perianth: anthers two-celled, opening inwards and longitudinally. Ovary free, 4-celled: ovules two, collateral in each cell, resupinately erect, or pendulous; foramens near the hilum: style one, entire or 4-fid: stigmas four, or one entire or 4-lobed. Fruit a capsule, 4-celled, 4-valved, loculicide, with no persistent axis: seeds erect (by resupination), or pendulous, two in each cell, rarely solitary, with an imperfect fungus-like arillus at the hilum: testa brittle: nucleus fleshy. Radicle next the hilum.—Shrubs. Leaves opposite, simple, entire, exstipulate. Flowers with two or more bractæ at their base.—Ex. *Penæa*, *Sarcocolla*.

We have examined the structure of the seeds of this order, and have come to the same conclusions as Gærtner, Lindley, and Kunth. The nucleus seems quite homogeneous, solid, and fleshy. There is no part in particular that one can describe as albumen, or cotyledons, or radicle; but from the situation of the foramen in the ovule, it may be presumed that the radicle points to the hilum. In those with erect seeds, the raphe is on the outer side of the seed, that is, at the opposite side from the placenta, and therefore we consider them resupinate.—The Gum-resin called Sarcocolla is obtained from several species.

Order 148. *Thymelææ*. Juss.

Perianth tubular, coloured, 4- (rarely 5-) cleft: estivation imbricate. Stamens definite, perigynous, usually eight, sometimes four (or more rarely two) and then opposite to the segments of the perianth: anthers two-celled, bursting longitudinally. Ovary free, one-celled: ovule one, pendulous: style one: stigma entire. Fruit a nut or a drupe. Albumen none, or thin and fleshy. Embryo straight: radicle short, superior: cotyledons plano-convex: plumule inconspicuous.—Shrubs, or rarely herbaceous plants, with a tough bark. Leaves entire, alternate or opposite, exstipulate.—Ex. *Daphne*, *Passerina*.

Allied to Santalacææ, Elæagnææ, and Proteacææ, from which they are readily known by one or two of the characters given.—The bark is caustic: it is composed of tenacious interlaced fibres, easily separable, which are sometimes worked into cordage: in the lace bark tree

(*Daphne Laghetto*), the inner bark resembles a piece of fine lace; that of *Daphne Gardneri*, and some others, is manufactured into paper. The berries of *D. Laureola* are poisonous to all animals except birds.

Order 149. *Aquilarinææ*. R. BROWN.

Perianth coriaceous, tubular, five-lobed. Stamens monadelphous; ten fertile, alternating with ten that are sterile and sometimes petaloid: anthers erect, two-celled, bursting longitudinally. Ovary free, ovate, of two carpels, one-celled: ovules two, suspended, acuminate, with the foramen at the apex: stigma sessile, simple. Placentas parietal. Capsule pyriform, one-celled, two-valved, loculicide. Seeds two (one to each placenta), arillate, or winged.—Trees. Leaves alternate, exstipulate.—Ex. *Aquilaria*, *Gyrinops*.

The above account of this little-known order we owe to Mr Lindley; and, if his observations be correct, the seed is probably suspended, and the radicle at the opposite extremity from the hilum. On account of the capsule being extremely compressed at the sutures of the valves, it is very difficult to determine whether the margins are not so much introflexed as to meet, and thus form a true dissepiment, and the fruit two-celled, as it has hitherto been described by Gærtner and Lamarck. Gærtner, moreover, describes and figures the seeds of *Gyrinops* as ascending. Nothing yet is known of the internal structure of the seed. Mr Brown arranges this order next to, if it do not form part of, Chailletiacææ, and mentions its relation to Thymelææ. The ambiguous kind of capsule, and appendage to the seeds, seem to point out some affinity with Penæacææ and Polygalææ. If the above description be correct, this order borders very closely on the Samydeæ.

Order 150. *Chailletiacææ*. R. BROWN.

Perianth five-partite, tepals persistent: estivation imbricate (D. C.) or valvate (LINDL.). Stamens inserted into the base of the perianth, and opposite its lobes, with alternating, sterile, petaloid, often bifid, filaments, each of which has usually a gland at its base on the inside: anthers ovate, versatile, two-celled. Ovary free, 2-3-celled: ovules two in each cell, collateral, pendulous: styles 2-3, distinct or combined: stigmas capitate. Fruit an osteocarpium, with the epicarp rather dry and coriaceous, or a capsule, 2-3-celled, one or two cells being often abortive. Seeds solitary in each cell, pendulous. Albumen none. Embryo thick: radicle short, superior: cotyledons fleshy.—Trees or shrubs. Leaves alternate, with two stipules. Peduncles axillary, often cohering with the petiole.—Ex. *Chailletia*, *Tapura*.

Plants with the appearance of *Celtis* (Amentacææ); they are allied somewhat to Terebinthaceæ, and also to Rosacææ.—*Chailletia toxicaria* is said to be poisonous.

Order 151. *Samydeæ*. GÆRTNER.

Perianth usually 5- (sometimes 3-7-) divided, coloured on the inside: estivation somewhat imbricate, seldom completely valvate. Stamens inserted on the tube of the perianth, two, three, or four times as many as its segments, either all fertile, or the alternate ones shorter, villous or ciliated, and sterile: filaments monadelphous at the base: anthers erect, ovate, two-celled. Ovary free, one-celled: ovules indefinite: style one, filiform: stigma capitate, or slightly lobed. Placentæ parietal. Capsule coriaceous, one-celled, 3-5-valved, dehiscing imperfectly; the inside often somewhat pulpy, and coloured. Seeds attached to the valves, not in any evident order, on the papillose or pulpy part, with a fleshy arillus and excavated hilum. Albumen fleshy. Embryo minute: radicle at the opposite extremity from the hilum: cotyledons ovate, foliaceous, plicate.—Leaves alternate, simple, with round and linear pellucid dots mixed, stipulate.—Ex. *Samyda*, *Casearia*.

Arrangement and Characters.

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The structure of the fruit shows great affinity with the Bixineæ and Flacourtianæ; in some respects also it is allied to Rosaceæ; but it approaches most to Chailletiacæ.—The bark and leaves are said to be slightly astringent.

Order 152. *Homalineæ*. R. BROWN.

Perianth with a short tube, the limb 4-15-partite, with usually as many alternating petaloid segments, either in the same row or forming an inner series. Glands or scales generally present in front of the outer or proper divisions of the perianth. Stamens perigynous, alternating singly, or in parcels of threes or sixes, with the outer segments of the perianth: anthers three-celled, bursting longitudinally. Ovarium partly cohering with the tube of the calyx or free, syncarpous, one-celled: ovules numerous: styles 3-5 (sometimes combined), simple, filiform, or subulate: stigmas 3-5. Placentæ 3-5, parietal. Fruit baccate or capsular, one-celled. Seeds sometimes arillate. Embryo in the axis of a fleshy albumen: radicle inferior, pointing to the hilum: cotyledons foliaceous.—Trees or shrubs. Leaves alternate, with deciduous stipules.—Ex. *Homalium*, *Pineda*, *Azara*.

This order is closely allied to Bixineæ and Samydeæ. Some botanists consider the alternate segments of the perianth as petals, and arrange it near to Rosaceæ.—The properties are unknown.

Div. IV.—*Monochlamydeæ*. D. C.

(10. Epistaminæ. Juss.)

10. Epista-
minæ.

Order 153. *Santalaceæ*. R. BROWN.

Suborder 1. *Exocarpeæ*. Perianth five- (rarely four-) partite, or of three tepals. Stamens perigynous, as numerous as the segments of the perianth, and opposite to them. Ovarium free, or partly cohering with the tube of the perianth: style short or none: stigma obtuse or lobed. Fruit a nut or drupe. Seed solitary. Embryo minute, in a fleshy albumen; radicle superior.—Shrubs or trees. Leaves alternate, exstipulate.—Ex. *Exocarpus*, *Anthobolus*.

Suborder 2. *Santaleæ*. Perianth 4-5-cleft: estivation valvate. Stamens 4-5, opposite the segments of the perianth, and inserted at their base. Ovarium cohering with the tube of the calyx, one-celled: ovules 2-4, pendulous from near the apex of a central placenta: style one: stigma often lobed. Fruit nut-like or drupaceous. Seed solitary. Embryo cylindrical, in the axis of a fleshy albumen: radicle superior.—Trees, shrubs, or herbaceous plants. Leaves alternate, or nearly opposite, exstipulate.—Ex. *Santalum*, *Thesium*.

Suborder 3. *Nysseæ*. Juss. Perianth 4-5-cleft. Stamens (in the bisexual flowers) opposite the segments of the perianth, as numerous, and inserted at their base: in the male flowers usually twice as many as the segments. Ovarium cohering with the tube of the perianth, one-celled: ovule one, occasionally two, pendulous from the apex of the cavity: style one: stigma simple or divided. Fruit drupaceous. Seed solitary. Albumen fleshy. Radicle superior: cotyledons broad, foliaceous.—Trees. Leaves alternate, exstipulate. Flowers polygamous.—Ex. *Nyssa*.

Notwithstanding that *Exocarpeæ* has the fruit wholly or partly free, and therefore belongs to the Peristaminæ, and that *Nysseæ* has no central placenta, and has foliaceous cotyledons, these three suborders can scarcely be separated. *Cervantesia* has petaloid scales alternating with the stamens, and, according to Ruiz and Pavon, an erect seed, an embryo at the apex of the albumen, and an inferior radicle, and therefore may be associated with *Exocarpus* till better understood. Sanders wood is the produce of *Santalum album*.

Order 154. *Aristolochiææ*. Juss.

Perianth tubular, three-cleft, regular, or sometimes very unequal: estivation valvate. Stamens (6-12) a multiple of the segments of the perianth, epigynous, distinct, or adhering to the style and stigmas. Ovarium cohering with the tube of the perianth, 3-6-celled: ovules indefinite, horizontal: style simple, short: stigmas radiating, as numerous as the cells of the ovary. Fruit dry or succulent, 3-6-celled. Seeds numerous. Embryo very minute, placed at the base of a cartilaginous albumen.—Herbaceous plants or shrubs, often climbing. Leaves alternate, with often leafy stipules. Flowers axillary, solitary, bisexual.—Ex. *Aristolochia*, *Asarum*.

In this family the root is the most active part; it has, particularly in *Aristolochia*, a bitter, aromatic, and sometimes even slightly acrid taste. This acidity is predominant in *Asarum*, which is emetic, whilst the other plants are generally stimulant.

Order 155. *Cytineæ*. R. BROWN.

Suborder 1. *Rhizanthææ*. BLUME. Perianth divided: estivation imbricated. Male flowers containing a solid central column, from the apex of which arise some horned processes: filaments none: anthers cohering with the column, extrorse, bursting longitudinally or by terminal pores. Ovarium cohering with the tube of the perianth, one-celled: ovules indefinite. Placentæ several, broad, parietal. Fruit a pulpy berry. Seeds indefinite, very minute.—Parasitic plants. Stem simple. Leaves in the form of scales. Flowers unisexual.—Ex. *Cytinus*, *Rafflesia*.

Suborder 2. *Nepentheæ*. LINK. Perianth four-parted: estivation imbricated. Male flowers containing a solid central column: filaments none: anthers about 16, sessile on and agglomerated into a spherical head at the apex of the column, extrorse, bursting longitudinally. Ovarium free, four-cornered, spuriously four-celled: ovules indefinite: stigma sessile, somewhat four-lobed. Placentæ parietal, constituting the spurious dissepiments. Fruit a capsule, spuriously four-celled, four-valved, loculicide. Seeds ascending, indefinite, very minute: testa loose, setaceous: tegmen ovate oblong, with a filiform process at each extremity. Embryo oblong, in the midst of a fleshy albumen: radicle pointing to the hilum: cotyledons plano-convex.—Leaves alternate, slightly sheathing at the base, with a foliaceous petiole that is pitcher-shaped at the extremity, with a lid-like lamina. Flowers unisexual, densely racemose.—Ex. *Nepenthes*.

Notwithstanding the diversity of habit, we consider these two to be extremely closely allied. In both, the solid central column of the male flowers may be viewed, in whole or in part, as an abortive pistillum. The stamens will thus be epigynous, although in *Nepenthes* the ovary be free. Perhaps Mr Brown was right in uniting this order as a section to the last.—The properties of *Nepenthes* are unknown. *Cytinus* and *Rafflesia* are astringents.

Div. IV.—*Monochlamydeæ*. D. C.

(11. Diclinales. Juss. § 1. Angiospermæ.)

Order 156. *Datisceæ*. R. BROWN.

Flowers unisexual. *Male*: Perianth deeply divided. Stamens several: anthers linear, membranous, two-celled, bursting longitudinally. *Female*: Perianth toothed. Ovarium cohering with the tube of the perianth, one-celled: ovules indefinite, parietal: styles three or four. Placentas parietal, as many as the styles. Fruit capsular, opening at the vertex, one-celled. Seeds indefinite, parietal: testa reticulated. Albumen none. Embryo straight: radicle pointing to the hilum.—Herbaceous branched plants. Leaves alternate, exstipulate.—Ex. *Datisca*, *Tetrameles*.

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Mr Lindley considers this as a connecting link between Resedaceæ and Urticeæ; Mr Brown, however, thinks that they differ widely. Both the above genera are dioecious.

Order 157. *Empetreeæ*. NUTTAL.

Flowers unisexual. Perianth gemmaceous, in four (rarely two) imbricated rows: each series of two or three hypogynous scales alternating with those of the next row; the inner often petaloid. Stamens 2-3, equal in number to the scales of each series, and alternating with the innermost, hypogynous: anthers roundish, two-celled, bursting longitudinally at their margin. Ovarium free, seated on the small fleshy discoid torus, with as many cells as stamens, or twice or thrice as many: ovules solitary, ascending: style one, short, deciduous: stigma radiating, multifid. Fruit a nuculanum, seated within the persistent perianth. Seeds solitary in each nucule, ascending: testa membranous: embryo cylindrical, in the axis of a fleshy albumen, and about the same length: radicle inferior: cotyledons semicylindrical, much shorter than the radicle.—Small heath-like shrubs. Leaves alternate, or somewhat verticillate, exstipulate.—Ex. *Empetrum*, *Corema*, *Ceratiola*.

Closely allied to Euphorbiaceæ. It has little or no affinity with the Ericaceæ, with which it is usually arranged; and as little with Coniferæ, where Nuttal places it. Don and most others view the inner series of the perianth as petals, the next as a calyx, and the outer, when present, as bracteas, and therefore consider them as allied to Celastriaceæ.

Order 158. *Euphorbiaceæ*. JUSS.

Flowers unisexual. Perianth lobed (sometimes wanting), with various internal glandular or petaloid scales (abortive petals) alternating with the lobes. Stamens definite or indefinite, distinct or monadelphous: anthers two-celled. Ovarium free, sessile, or rarely stalked, 2-3- or sometimes many-celled; carpels arranged round a central column: ovules solitary or in pairs, suspended: styles equal in number to the cells, distinct or combined, sometimes none: stigmas several, or one with several lobes. Fruit of two, three, or more cocci, which are usually distinct and elastically two-valved, sometimes indehiscent or closely cohering. Seeds solitary or in pairs, suspended, arilate. Embryo inclosed in a fleshy albumen: radicle superior, pointing to the hilum: cotyledons flat.—Trees, shrubs, or herbaceous plants, often lactescent. Leaves usually with stipules, opposite or alternate, sometimes none.—Ex. *Euphorbia* (Plate CXXI.), *Buxus*, *Croton*, *Ianipha* (Plate CXXII.)

This order is usually arranged among the Monochlamydeæ, and next the Urticeæ; but if Coriariæ belong to the Thalamifloræ, so ought the Euphorbiaceæ, for the petaloid bodies, often in this family reduced to mere glands, are of the same nature in both. The stigmas of many Euphorbiaceæ resemble much those of Coriariæ; and perhaps the true place for them in a linear series is between the Coriariæ and Celastrineæ.—The plants of this order are acrid, caustic, and poisonous. Their deleterious effects are owing to the milky juice which most of them possess; but they may be deprived of this very easily by means of heat, so that the root of the *Ianipha Manioc* becomes a wholesome food. The albumen of the seed contains much fat and sweet oil, but the embryo is acrid and purgative. It is impossible to give here the various modifications of the properties to be found in this family. They are discussed at length by Ad. de Jussieu, in his treatise on this family.

Order 159. *Urticaceæ*. JUSS.

Suborder 1. *Urticeæ*. JUSS. Flowers unisexual, scattered or clustered. Perianth membranous, lobed, persistent.

Stamens definite, distinct, inserted into the base of the perianth, and opposite its lobes: filaments sometimes curved inwards during estivation. Ovarium free, one-celled: ovule solitary, erect: stigma simple. Fruit an indehiscent nut, surrounded by the membranous or fleshy perianth. Seed solitary, erect. Albumen 0, or very thin. Embryo straight, or curved, or spiral: radicle superior, remote from the hilum.—Trees, shrubs, or herbaceous plants. Leaves alternate, hispid, or scabrous, stipulate.—Ex. *Urtica*, *Cannabis*, *Humulus*.

Suborder 2. *Ulmææ*. MIRBEL. Flowers bisexual or polygamous, scattered. Perianth campanulate, divided. Stamens definite, inserted into the base of the perianth, erect during estivation: ovarium free, two-celled: ovules solitary, pendulous: style 0: stigmas two. Fruit one or two-celled (one of them abortive), a samara or a drupe. Seed one, pendulous: albumen 0, or very thin. Embryo straight: radicle superior: cotyledons foliaceous.—Trees or shrubs. Leaves simple, alternate, stipulate.—Ex. *Ulmus*, *Celtis*.

Suborder 3. *Artocarpeæ*. R. BROWN. Flowers unisexual, in heads or catkins. Perianth usually divided, sometimes tubular or entire. Stamens solitary or several, straight during estivation. Ovarium free, or rarely cohering with the perianth, 1-2-celled: ovule suspended: style one, filiform: stigma bifid. Fruit a sorosus or syconus, which is sometimes, but very rarely, reduced to a single flower. Seed solitary, suspended. Albumen thin or inconspicuous. Embryo straight or curved: radicle pointing superior.—Trees, shrubs, or herbaceous plants, with milky juice. Leaves alternate: stipules deciduous, convolute in veneration. Ex. *Artocarpus* (Plate CXXV.), *Morus*, *Ficus*.

We follow Richard and some others in combining these three. The Ulmaceæ, however, from the two-celled ovarium, ought perhaps, as has been done by De Candolle and Duby, to be united to the Amentaceæ. Mr Brown says that they should be rejected on account of the pendulous ovules. But then he states Artocarpeæ to have the ovules erect. Mr Lindley, however, finds them suspended. We have in several species observed them to be peritropal, and in general attached to a point opposite the base of the style: the radicle is however always superior, wherever be the hilum.—In the Urticeæ the fibres of the stem are very tenacious. The leaves of the hemp are narcotic. The hop is extremely bitter, and the effluvia is said to cause sleep. The nettles are well known for the stinging property of the hairs on their leaves. The bark of the Elm (*Ulmus*) is bitter and astringent. The fruit of most of the Artocarpeæ is edible; but the juice is usually acrid, and contains more or less of caoutchouc. The *Antiaris toxicaria*, the celebrated Upas or poison-tree of Java, belongs to this tribe. *Brosimum galactodendron*, or the cow-tree of Humboldt, is a solitary instance of the milk being wholesome. The banyan-tree of India is the *Ficus religiosa*.

Order 160. *Monimieæ*. JUSS.

Flowers unisexual, collected together, the males and females into different involucre: involucre toothed or lobed, valvular during estivation. Perianth 0. Stamens numerous, covering the whole interior of the involucre: anthers two-celled, bursting longitudinally. Ovaria several, sessile, and inclosed within the tube of the involucre, each with one style and one stigma: ovule solitary, pendulous. Fruit a dry syconus. Seed pendulous. Embryo in the midst of a copious albumen: radicle superior.—Trees or shrubs. Leaves opposite, exstipulate. Flowers axillary, in short racemes.—Ex. *Monimia*, *Boldoa*.

Closely allied to the Urticaceæ.—The bark and leaves give out when bruised a highly aromatic smell.

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Order 161. *Atherospermeæ*. R. BROWN.

Flowers unisexual, collected together, males and females usually in distinct, rarely in the same, involucre: involucre tubular, divided at the extremity, the divisions usually in two rows, of which the inner, and sometimes all, are petaloid, accompanied in the pistilliferous involucre with a few scales. Stamens in the purely stamiferous involucre very numerous, inserted into the bottom of the involucre, mixed with scales; in the involucre having also pistilla, they are fewer, and arise from its orifice: anthers adnate, two-celled, bursting with a valve that separates from the base to the apex. Ovaria several, usually indefinite: ovule solitary, erect: styles simple, sometimes arising from the side or the base: stigma undivided. Achenia furnished with the persistent styles, become feathery, included within the enlarged tube of the involucre. Seed solitary, erect. Embryo short, at the base of a soft fleshy albumen: radicle inferior.—Trees. Leaves opposite, exstipulate. Flowers axillary, solitary.—Ex. *Atherosperma*, *Laurelia*.

The anthers indicate some affinity to the Berberideæ and Laurineæ. Mr Brown and Mr Lindley consider the involucre a perianth. We have been induced to differ from them only by the analogy subsisting between this order and Monimieæ, with which they agree in many very important points; like them they are aromatic.

Order 162. *Lacistemeæ*. MARTIUS.

Perianth in several narrow divisions, covered by a dilated bractea. Stamen one, hypogynous: anther two-celled, separated by a thick two-lobed connectivum, bursting transversely. Torus a fleshy disc. Ovarium free, one-celled: ovules several, ascending: style scarcely any: stigmas two, three, or four; small, subulate, spreading. Placentas parietal. Fruit capsular, 2-3- or 4-valved, loculicide. Seed usually (by abortion) solitary, suspended from a long funiculus, with a fleshy arillus: testa crustaceous. Embryo in a fleshy albumen: radicle straight, cylindrical, superior: cotyledons flat.—Small trees or shrubs. Leaves simple, alternate, exstipulate. Flowers in axillary clustered catkins.—Ex. *Lacistema*.

Martius and Lindley attribute to this a fleshy albumen; St Hilaire and Kunth say there is none. Some authors suppose the perianth to consist only of four pieces, accompanied with one or more bractea, and the whole surrounded by a large bractea. We, however, are rather inclined to consider the supposed perianth as mere processes from the torus, and consequently this tribe approaches very near to the Chlorantheæ. Although all the flowers are bisexual, the upper ones only of the catkin are fertile, whence we have arranged the order among the Diclinales, with which it is otherwise most allied.

Order 163. *Chlorantheæ*. R. BROWN.

Flowers without a perianth, bisexual or unisexual, with a supporting scale. Stamens definite, lateral; if more than one, connate: filament adhering slightly to the ovary: anthers one-celled, bursting longitudinally, each adnate to a fleshy connectivum, which coheres laterally in various degrees, so as to represent usually only one anther with several cells. Ovarium one-celled, ovule solitary, pendulous: stigma simple, sessile. Fruit drupaceous, indehiscent. Seed pendulous. Embryo minute, at the apex of a fleshy albumen: radicle inferior, pointing to the opposite extremity from the hilum: cotyledons divaricate.—Herbaceous or suffrutescent plants. Stems jointed. Leaves opposite, simple, with sheathing petioles, and minute intervening stipules. Flowers in terminal spikes.—Ex. *Chloranthus*, *Ascarina*, *Hedyosmum*.

Allied to Piperaceæ. "Their anthers consist of a fleshy mass, upon the face of which the cell lies that bears the pollen. Whether these anthers are one or two-celled, is a

matter of doubt; one botanist considering those which have two cells to be double anthers, another considering those with one cell to be half anthers."—(Lindl.) *Chloranthus officinalis* has an aromatic fragrant smell, which is combined in the root with a somewhat bitter flavour, giving it the same properties as *Aristolochia serpentaria*.

Order 164. *Piperaceæ*. RICHARD.

Suborder 1. *Piperineæ*. Flowers without a perianth but with a bractea, bisexual. Stamens definite or indefinite, arranged on one side, or all round the ovary, to which they adhere more or less: anthers one or two-celled, with or without a fleshy connectivum: pollen smooth. Ovarium solitary, free, one-celled: ovule solitary, erect: stigma simple, sessile, rather oblique. Fruit somewhat fleshy, one-celled. Seed erect. Embryo inclosed in a fleshy endosperm, placed on the outside of the perisperm, at the opposite extremity from the hilum.—Shrubs or herbaceous plants. Leaves opposite (sometimes alternate by abortion), or verticillate, exstipulate. Flowers in spikes.—Ex. *Piper*, *Peperomia*.

Suborder 2. *Saurureæ*. RICHARD. Flowers without a perianth, seated on a scale or bractea, bisexual. Stamens three or six, clavate, hypogynous or cohering with the angles of the germen, persistent: anthers continuous with the filament, with a thick connectivum, and two lobes bursting longitudinally. Ovaria four, apocarpous, with one ascending ovule and a sessile recurved stigma to each; or syncarpous, consisting of three or four carpella, one or 3-4-celled, with several ascending ovules, and 3-4 sessile recurved stigmas. Fruit either consisting of four fleshy achenia, or a one or 3-4-celled capsule, opening at the apex and containing several ascending seeds. Seeds with a membranous testa. Embryo minute, inclosed in a fleshy endosperm, situated on the outside of a hard mealy perisperm at the extremity remote from the hilum.—Herbaceous plants, growing in marshy places, or floating in water. Leaves alternate, stipulate. Flowers in spikes, rarely with a four-leaved involucre at the base of the spike.—Ex. *Saururus*, *Aponogeton*, *Houttuynia*.

This order has floated for some time between the Dicotyledones and Monocotyledones; but what Richard and others took for a monocotyledonous embryo, proves now to be merely the embryonic sac, or endosperm. As to *Houttuynia*, we have referred it here, notwithstanding several botanists have considered it as more allied to the Aroidæ.—The common pepper is well known as pungent, stimulant, and aromatic, and this represents the ordinary property of the Piperineæ.

Order 165. *Amentaceæ*. JUSS.

Suborder 1. *Salicineæ*. RICHARD. Flowers in unisexual amenta. Stamens distinct or monadelphous: anthers two-celled. Ovarium free, one or two-celled: ovules numerous, erect, attached to the bottom of the cell or to the base of two parietal placentas: style one or none: stigmas two. Fruit a coriaceous capsule, one or two-celled, two-valved, loculicide. Seeds numerous, adhering as in the ovary, comose. Albumen 0. Embryo straight: radicle pointing to the hilum.—Trees or shrubs. Leaves alternate, with stipules that are often deciduous.—Ex. *Salix*, *Populus*.

Suborder 2. *Myricææ*. RICH. Flowers unisexual in an amentum, which is sometimes globose. Stamens one or several, each subtended by a scale: anthers two-celled, 2-4-valved, opening longitudinally. Ovarium one-celled, with several hypogynous scales: ovule solitary, erect: stigmas two, subulate. Fruit drupaceous, often covered with waxy granules; surrounded by the scales of the ovary become fleshy and adherent; or dry and dehiscent, with the scales distinct. Seed solitary, erect. Albumen 0. Embryo straight: radicle short, superior: cotyledons

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thers erect, two-celled, bursting longitudinally. *Females* with a single or double perianth: the exterior four-parted, the inner (when present) of four pieces. Ovarium cohering with the perianth, one-celled: ovule solitary, erect: styles one or two, very short, or none: stigmas large, either two and lacerated, or discoid and four-lobed. Fruit (a drupe) fleshy, containing a 2-4-valved, one-celled, putamen. Seed four-lobed, with a membranaceous testa. Albumen none. Embryo large: radicle superior: cotyledons fleshy, two-lobed, wrinkled.—Trees. Leaves alternate, without pellucid dots or stipules.—Ex. *Juglans*.

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Suborder 3. *Betulineæ*. RICH. Flowers unisexual in an amentum, the males sometimes having a membranous toothed perianth (or rather an expansion of the torus). Stamens distinct, or rarely monadelphous: anthers two-celled. Ovarium two-celled: ovules definite, pendulous: style one or none: stigmas two. Fruit membranous, indehiscent, by abortion one-celled. Seeds pendulous, not comose. Albumen 0. Embryo straight: radicle superior.—Trees or shrubs. Leaves alternate: stipules deciduous.—Ex. *Betula*, *Alnus*.

Suborder 4. *Platanææ*. JUSS. Flowers in unisexual globose amenta. Stamens distinct, with several small scales and appendages mixed among them: anthers linear, two-celled. Ovaria terminated by a thick style, with the stigma lateral and adnate: ovules solitary or in pairs, pendulous. Fruits in consequence of mutual compression clavate, bony, with a persistent recurved style. Seeds solitary, or rarely in pairs, pendulous, elongated: testa thick. Embryo long, cylindrical, in the axis of a fleshy albumen; radicle inferior.—Trees or shrubs. Leaves alternate, with scarious sheathing stipules.—Ex. *Platanus*.

Suborder 5. *Cupuliferææ*. RICH. Flowers unisexual, in amenta, the females sometimes aggregated. Stamens 5-20, generally distinct, inserted into the base of the scales or of a membranous perianth. Ovarium seated in a coriaceous involucre (*cupula*), crowned by the rudiments of an adherent perianth, plurilocular: ovules two or one, pendulous: stigmas several, nearly sessile, distinct. Fruit a gland. Seed solitary, pendulous. Albumen 0. Embryo large: radicle superior, small: cotyledons plano-convex.—Trees or shrubs. Leaves alternate, exstipulate.—Ex. *Quercus*, *Corylus*, *Fagus*.

We leave this order entire, nearly as done by Jussieu. With regard to the suborders, their limits are not yet well fixed. Thus De Candolle excludes *Liquidamber* from the *Myricææ*, on account of the globular catkins and palm-nerved leaves, and alters materially the character of *Platanææ* for its reception; but although more allied in habit to *Platanus*, these two genera seem to differ widely in the structure of the seed.—As to medical properties, the *Salicineææ* have the bark bitter and febrifugal. The *Myricæææ* are aromatic. The bark of *Betulineææ* is astringent and somewhat febrifugal. *Cupuliferæææ* are tonic, stomachic, and febrifugal. The bark of the oak is employed for tanning. Cork is the bark of the *Quercus Suber*. The Hazel, Beech, and Sweet Chestnut, belong to this suborder.

Order 166. *Stilagineææ*. AGARDH. Flowers unisexual. Perianth 3-5-partite. Stamens two or more, arising from a tumid receptacle: filaments capillary: anthers erect, two-lobed, with a fleshy connectivum, and vertical cells opening transversely. Ovarium free: ovules two: stigma sessile, 3-4-toothed. Fruit drupaceous. Seed solitary, suspended. Embryo in the midst of a copious fleshy albumen: cotyledons foliaceous.—Trees or shrubs. Leaves alternate, with deciduous stipules.—Ex. *Stilago*, *Antidesma*.

An order by no means understood. In some points it appears to approach the *Amentaceæææ*, particularly *Cupuliferææææ* and *Platanææææ*.

Order 167. *Juglandææææ*. D. C. Flowers unisexual. *Males* in an amentum. Perianth scaly, oblique, irregularly lobed. Stamens inserted on the receptacle, indefinite: filaments short, distinct: an-

Div. IV.—*Monochlamydeææææ*. D. C.

(11. *Diclinesææææ*. JUSS. § 2. *Gymnospermeææææ*.)

11. *Diclinesææææ*.
2. *Gymnospermeææææ*.

Order 168. *Conifereææææ*. JUSS.

Flowers unisexual. *Male* florets consisting of one or several monadelphous stamens, collected in an amentum about a common rachis: anthers two or many-lobed, bursting outwardly; often terminated by a crest, which is an uncovered portion of the scale out of which each stamen is formed. *Females* usually in cones, sometimes solitary. Ovarium none (in the solitary flower), or spread open (in the cone) and resembling a flat scale, destitute of style or stigma, arising from the axil of a membranous bractea: ovules exposed; in the cones in pairs on the face of the ovary, inverted; in the solitary flower erect. Fruit, a solitary naked seed, or a cone. Seeds with a hard crustaceous testa. Embryo in the midst of a fleshy oily albumen: radicle next the apex of the seed, having an organic connection with the albumen.—Trees or shrubs; trunk branched, abounding in resin. Leaves with the veins parallel to each other.—Ex. *Pinus*, *Taxus*, *Thuja*.

There are often more than two cotyledons, but they are opposite, whence perhaps they may be viewed as only two, but multipartite. "The structure of the *Conifereæææææ* differs so widely from that of the true (or angiospermous) *Dicotyledonsæææææ*, that a single glance will in general enable us to distinguish the one tribe from the other. In the *Conifereæææææ* there is only one regular system of pores, resembling a piece of the most delicate net-work. Each mesh is bounded by straight lines crossing each other at nearly right angles, and the concentric lines of the meshes almost always approximate each other at the outer edge of each annual layer of the wood. The structure of the true *Dicotyledonsæææææ* consists of a system of vessels separated from each other by masses of cellular matter, and the vessels or pores are always bounded by curved lines."¹—This order is of great importance on account of its timber. But it is also valuable for its resinous productions; various kinds of pitch, turpentine, and balsams being procured from the different species. The large seeds of some are eaten, and are wholesome. The berries of some species of *Juniper* are diuretic.

Order 169. *Cycadeæææææ*. RICH.

Flowers unisexual. *Males* naked, collected into cones; each floret of a single scale or anther, bearing the pollen on its under surface in two-valved cells, which cohere together by twos, threes, or fours. *Females* either collected in cones, or surrounding the central bud in the form of contracted leaves or scales (the expanded ovaria). Ovules

¹ Nicol in Jameson's *New Phil. Journal*, vol. x. p. 362.

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exposed on the margin of the scale or contracted leaf. Embryo in the midst of a fleshy or horny albumen: radicle next the apex of the seed, from which it hangs by a long funiculus, with which it has an organic connection.—Trees with a simple cylindrical trunk. Leaves pinnatisect; vernation gyrate.—Ex. *Cycas* (Plate CXXVI.), *Zamia*.

These trees increase by the development of a single terminal leaf-bud. The wood consists of concentric circles, the cellular rings between which are very loose. They seem to hold a middle rank between the Coniferæ and Palms.—They abound in a mucilaginous juice. A kind of Sago is obtained from the soft centre of *Cycas circinalis*.

B. ENDOGENÆ. D. C. (MONOCOTYLEDONES. JUSS.)

12. Monoepigynæ.

(12. Monoepigynæ. JUSS.)

Order 170. *Balanophoræ*. RICH.

Flowers unisexual, in dense heads; the receptacle covered with scales or bristles, and also here and there with peltate thick scales; rarely naked. Male flowers pedicellate. Perianth tripartite, equal, spreading, or in place of it a thick truncate obconical scale. Stamens epigynous, 1-3: filaments united: anthers connate, opening longitudinally. Females: Ovarium cohering with the perianth, and crowned by its limb, one-celled: ovule solitary, pendulous: style one, rarely two, filiform: stigma simple, terminal, slightly convex. Achenium crowned by the remains of the limb of the perianth, roundish. Embryo very minute, roundish, inclosed in a hollow on the surface of a fleshy cellular albumen.—Fungous-like, parasitical plants: stem naked or covered with imbricated scales.—Ex. *Balanophora*, *Helosis*, *Cynomorium*.

Professor Richard considered this order most nearly allied to the Hydrocharideæ: there is also some affinity with the Cytinæ. Agardh makes them a section of Urticæ. May not what is taken for the embryo be the endosperm, and what is called albumen the perisperm?—*Cynomorium* is astringent.

Order 171. *Hydrocharideæ*. JUSS.

Flowers spathaceous, uni- or rarely bisexual. Perianth with the limb six-partite; the three exterior segments herbaceous, the three inner petaloid. Stamens epigynous, definite or indefinite. Ovarium solitary, cohering with the tube of the perianth, one or spuriously many-celled: ovules indefinite: stigmas 3-6. Placentas parietal, sometimes projecting into the centre of the ovarium. Fruit dry or succulent, indehiscent, one- or spuriously many-celled. Seeds numerous, ascending: testa thin, membranous. Albumen none. Embryo straight, cylindrical: radicle at the opposite extremity from the hilum.—Floating plants. Flowers spathaceous.—Ex. *Hydrocharis*, *Stratiotes*, *Vallisneria*.

Allied in some points to the Alismaceæ, but differing in the cohering ovarium. The spiral peduncles of *Vallisneria*, and the process of fertilization in that plant, are highly curious.

Le Rhône impétueux, sous son onde écumante,
Durant six mois entiers nous dérobe une plante
Dont la tige s'allonge en la saison d'amour,
Monte au-dessus des flots, et brille aux yeux du jour.
Les mâles, dans le fond jusqu'alors immobiles,
De leurs liens trop courts brisent les nœuds débiles,
Voguent vers leur amante, et libres dans leurs feux,
Lui forment sur le fleuve un cortège nombreux:
On diroit une fête où le dieu d'hyménée
Promène sur les flots sa pompe fortunée;
Mais les tems de Vénus une fois accomplis,
La tige se retire en rapprochant ses plis,
Et va mûrir sous l'eau sa semence féconde.¹

Order 172. *Orchideæ*. JUSS.

Perianth with a ringent, six-partite, limb: outer segments usually coloured, of which the odd one is often uppermost by a twisting of the ovary: inner segments more petaloid, the odd one or the *labellum* being frequently lobed and unlike the others, and often spurred at the base. Stamens in a double row, three, epigynous, united in a central column; either the two lateral (opposite to the lateral inner segment of the perianth) or the central one (opposite to the odd exterior segment) being abortive; very rarely all the three fertile: anther persistent or deciduous, two, or four, or eight-celled: pollen powdery, or cohering in definite or indefinite waxy masses. Ovarium one- (very rarely three-) celled, cohering with the tube of the perianth: ovules indefinite: style forming part of the column of the stamens: stigma a viscid cavity in front of the column, communicating directly with the ovary by an open canal. Placentas three, parietal. Capsule three-ribbed, three-valved, rarely baccate. Seeds very numerous: testa loose, reticulated. Albumen none. Embryo a solid fleshy mass.—Herbaceous plants. Leaves simple, quite entire.—Ex. *Orchis*, *Goodyeria*, *Epidendrum*, *Cypripedium*.

Nearly allied to the following order. The botanical world have to thank Mr Brown for first giving a correct view of the organization of the flowers of these plants. *Apostasia* has a regular flower, a three-celled ovary, and three perfect stamens.—The Orchideæ are beautiful to the eye, but of little use. Salep is obtained from the roots of *Orchis mascula*. Vanilla, used so much for mixing with chocolate, is the succulent fruit of a West Indian species.

Order 173. *Amomeæ*. JUSS.

Suborder 1. *Scitamineæ*. R. BROWN. Perianth in a double row; exterior tubular, three-lobed, short; inner elongated, tubular, trifid, segments nearly equal. Stamens in two rows; the outer (projections of the torus) sterile, resembling a trifid tubular corolla, of which the intermediate segment (*labellum*) is larger than the rest (which are sometimes nearly abortive), and often three-lobed: stamens of the inner row distinct, two sterile; one intermediate, fertile, at the opposite side of the flower from the labellum: filament not petaloid, often extended beyond the anther: anther two-celled, opening longitudinally. Ovarium three-celled, or imperfectly so: ovules several: style filiform: stigma dilated, hollow. Placenta in the axis. Fruit usually capsular, three-celled: occasionally baccate. Seeds numerous. Embryo inclosed in a membranous endosperm, surrounded by a farinaceous albumen, that is deficient near the hilum.—Herbaceous aromatic plants. Stems simple. Leaves sheathing: midrib central, with numerous diverging simple veins. Flowers arising from spathaceous bractæas.—Ex. *Amomum*, *Zingiber*.

Suborder 2. *Canneæ*. R. BROWN. Perianth in a double row; exterior three-lobed, short; interior elongated, tubular, trifid, segments nearly equal. Stamens in a double row; the outer (projections of the torus) sterile, resembling a trifid tubular corolla, of which one of the lateral segments is unlike the others: stamens of the inner row distinct, petaloid; two sterile, one lateral fertile: filament petaloid, entire or two lobed: anther opening longitudinally, one-celled, seated on the margin of the filament (the other cell belonging to the other margin being always abortive). Ovarium three-celled (rarely one-celled), ovules solitary and erect, or numerous and attached to the axis: style petaloid or swollen: stigma either the naked apex of the style, or hollow, cucullate, and incurv-

¹ Castel, *Poème sur les Plantes*.

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ed. Fruit capsular, three-celled; or baccate, one-celled, one-seeded. Albumen (perisperm) hard, somewhat farinaceous. Embryo straight, without endosperm: radicle lying against the hilum.—Herbaceous plants, not aromatic. Leaves and inflorescence as in the Scitamineæ.—Ex. *Maranta, Canna, Phrynium*.

The above view of the structure of these plants being nearly that adopted by Lestiboudois, Richard, and Lindley, is somewhat at variance with that proposed by Mr Brown, who considers the outer row of our perianth as accessory, and what is here called the outer sterile stamens to be the inner row of the perianth. But this order is closely allied to the Musaceæ, and the affinity is confirmed by the supposition of six stamens, although only one be perfect.—The Scitamineæ are aromatic, cordial, and stomachic: Ginger, Galangale, and Zedoary are the roots or rhizoma; Cardamoms are the seeds of several species. The Canneæ are scarcely or not at all aromatic, and hence the fecula which abounds in the root furnishes a delicate article of food. Arrow-root is obtained from more than one species, but principally from *Maranta arundinacea*, the juice of the root of which is said to be a cure for wounds inflicted by poisoned arrows.

Order 174. *Musaceæ*. JUSS.

Perianth six-cleft, in two rows, more or less irregular. Stamens six (some occasionally abortive), inserted on the middle of the divisions of the perianth: anthers linear, two-celled, introrse, often with a membranous petaloid crest. Ovarium cohering with the tube of the perianth, three-celled: ovules numerous, or rarely only three: style simple: stigma usually three-lobed. Fruit either a three-celled, three-valved, loculicidal capsule; or succulent and indehiscent. Seeds sometimes surrounded by hairs: testa usually crustaceous. Embryo in the axis of a farinaceous albumen.—Stem scarcely any. Leaves sheathing, and forming a spurious stem: limb separated from the petiole by a round tumour, having a midrib with fine parallel diverging veins. Flowers spathaceous.—Ex. *Musa, Streitzia*.

By comparing this with the last order, their relation will be readily perceived.—The young shoots of the Banana (*Musa sapientum*) are eaten as a delicate vegetable. The fruit of the same is nourishing, and either it, or that of the Plantain (*M. paradisiaca*), in some parts of the world, forms the principal food of the natives.

Order 175. *Irideæ*. JUSS.

Perianth tubular, six-parted, in two often unequal rows. Stamens three, epigynous, distinct or monadelphous, opposite the outer segments of the perianth: anthers two-celled, bursting outwardly. Ovarium cohering with the tube of the perianth, three-celled: ovules numerous: style one: stigmas three, dilated, often petaloid, and sometimes two-lipped. Capsule three-celled, three-valved, loculicidal. Seeds numerous. Embryo cylindrical, inclosed within a fleshy or horny albumen: radicle pointing to the hilum.—Plants usually herbaceous. Leaves equitant and distichous, except in *Crocus*. Flowers with spathaceous bractæ.—Ex. *Iris, Ixia, Crocus*.

Allied on the one hand to the Amomeæ, and on the other to the Amaryllideæ.—Of no great utility. The orris, however, is the root of *Iris Florentina*. Some other species of *Iris* are purgative. Saffron is the dried stigmas of a *Crocus*. The root of the common *Iris*, when cut by an iron or steel knife, yields a beautiful purple dye.

Order 176. *Burmannieæ*. SPRENG.

Perianth petaloid, tubular, six-cleft, the three outer segments carinate, the three inner minute. Stamens three, inserted on the tube, opposite the inner segments of the perianth, with sometimes three alternating sterile filaments: anthers erect, two-celled, opening transversely, with a

fleshy connectivum. Ovarium cohering with the tube of the perianth, three-celled, the cells being opposite the inner segments of the perianth: ovules indefinite: styles single: stigma three, dilated. Capsule crowned by the withered perianth, three-celled, three-valved. Seeds indefinite, minute, striated.—Herbaceous plants, with radical equitant leaves.—Ex. *Burmanniea*.

Allied to Irideæ in many respects, but differing by the fertile stamens being alternate with the outer segments of the perianth; but this ought perhaps to be viewed as accidental (however constant), as the return to the symmetrical arrangement is exhibited in the position of the carpellary leaves.

Order 177. *Hæmodoreæ*. R. BROWN.

Suborder 1. *Hæmodoreæ*. Perianth petaloid, six-cleft. Stamens inserted on the perianth, either three and opposite the inner segments of the perianth, or six: anthers bursting inwardly. Ovarium cohering with the tube of the perianth, or very rarely free, of three carpels, three- or rarely one-celled: ovules 1-2, or numerous, to each carpel: style simple: stigma undivided. Fruit capsular, three valved, seldom indehiscent, somewhat nucamentaceous. Seeds definite and peltate, or indefinite: testa chartaceous. Embryo minute, a farinaceous albumen: radicle next the hilum.—Leaves equitant.—Ex. *Hæmodorum, Dilatris*.

Suborder 2. *Wachendorfiæ*. Perianth petaloid, six-parted, irregular. Stamens three, inserted on the base of the inner segments of the perianth: anthers bursting inwardly. Ovarium free, three-celled: ovules solitary or numerous: style simple: stigma undivided. Fruit capsular, three-celled, three-valved. Seeds roundish.—Leaves equitant.—Ex. *Wachendorfia, Xiphydium*.

This order is related both to Irideæ and Amaryllideæ. *Wachendorfiæ*, though allied in many respects to *Hæmodoreæ*, might perhaps, without great violence, be rather placed between Liliaceæ and Bromeliaceæ.—The roots of *Hæmodorum, Dilatris*, and *Wachendorfia*, yield a red dye.

Order 178. *Amaryllideæ*. R. BROWN.

Perianth petaloid, regular, six-cleft; the outer segments overlapping the inner, which are equitant. Stamens six (rarely more, and then hexadelphous), inserted on the perianth, sometimes cohering by their dilated bases into a kind of cup: anthers bursting inwardly. Ovarium cohering with the tube of the perianth, three-celled: ovules indefinite, rarely 1-2: style one (rarely three): stigma three-lobed (rarely three). Fruit either a three-celled, three-valved, loculicidal capsule, or baccate. Seeds numerous in the capsular, 1-2 in the baccate species: testa neither black nor crustaceous. Albumen fleshy. Embryo somewhat straight: radicle next the hilum.—Roots usually bulbiferous, rarely fibrous. Leaves ensiform, with parallel veins. Flowers with spathaceous bractæ.—Ex. *Amaryllis, Narcissus*.

Allied to the *Hæmodoreæ*, but much more to Liliaceæ and Asphodeleæ. The coronas of *Narcissus* and some other genera may be viewed either as a second row of sterile cohering filaments between the fertile ones and the perianth, or as a process of the torus, both considerations tending to prove that the perianth is more of the nature of a calyx than a corolla. Although having three styles and stigmas, we refer *Campynema* here.—The juice of the root of *Hæmanthus toxicarius* is poisonous. The bulbs of some species of *Narcissus* and *Pancratium* are emetic. Some *Alstræmeria* are diuretic. *Amaryllis ornata* is astringent.

Order 179. *Hypoxideæ*. R. BROWN.

Perianth petaloid, usually six-parted, regular: estivation imbricate. Stamens inserted into the base of the

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segments, equal to them in number: anthers introrse. Torus an epigynous fleshy disc. Ovarium cohering with the tube of the perianth, three-celled: ovules numerous: style single: stigma three-lobed. Capsule indehiscent, sometimes succulent. Seeds numerous: testa black and crustaceous: hilum lateral, rostelliform. Embryo in the axis of a fleshy albumen.—Herbaceous, stemless (or nearly so) plants. Leaves plicate.—Ex. *Hypoxis*, *Curculiago*.

Allied to *Hæmodoraceæ*, and also to *Asphodoleæ*, particularly in the black crustaceous seed.

Order 180. *Barbaceniceæ*.

Perianth petaloid, six-partite, regular, in a double series. Stamens six, or in six (rarely three) fascicles, inserted into the base of the segments: anthers introrse. Torus an epigynous fleshy disc. Ovarium cohering with the tube of the perianth, three-celled: ovules numerous: style single: stigma three-lobed. Capsule three-celled, three-valved. Seeds indefinite, cuneiform: testa coriaceous, furrowed: hilum prominent.—Ex. *Barbacenia*, *Vellozia*, *Xerophyta*.

An order pointed out by Mr Don, as holding a middle place between *Hypoxideæ*, and *Bromeliaceæ*.

Order 181. *Dioscoreineæ*.

Suborder 1. *Dioscoreæ*. R. BROWN. Flowers uni- (rarely bi-) sexual. Perianth six-cleft, equal. Stamens six, distinct, or rarely monadelphous, inserted into the base of the segments of the perianth: anthers introrse. Ovarium cohering with the tube of the perianth, three-celled: ovules one or two in each cell: style trifid: stigmas undivided. Fruit a thin compressed capsule, with two of the cells sometimes abortive. Seeds flat: testa membranaceous. Embryo small, lying in a large cavity of a somewhat horny albumen, near the hilum.—Twining shrubs. Leaves alternate, occasionally opposite, veins generally reticulated. Flowers small, spiked, each with 1-3 bractæ.—Ex. *Dioscorea*, *Testudinaria*.

Suborder 2. *Tameæ*. GRAY. Flowers unisexual. Perianth petaloid, six-parted. Stamens six, inserted into the base of the segments of the perianth. Ovarium three-celled: ovules two in each cell, erect: style one: stigmas three, reflexed, acutely bifid. Fruit fleshy, three-celled, indehiscent. Seeds ovate: testa membranaceous. Albumen between cartilaginous and horny. Embryo minute, lying at the extremity remote from the hilum.—Root tuberous. Stem herbaceous, twining from left to right. Leaves alternate. Flowers small, axillary, racemose.—Ex. *Tamus*.

This order agrees in many points with *Smilacææ*, but differs by the adherent fruit. According to Mr Lindley, it makes a near approach in structure to the *Dicotyledones*, the leaves being those of that class, while the stem, flower, and seeds, are those of the *Monocotyledones*. The suborders are so closely allied that *Testudinaria*, till lately, was considered a species of *Tamus*.—The tubers or yams produced by *Dioscorea* are well known as an article of food in all tropical countries.

B.—ENDOGENÆ. D. C.

(13. Monoperigynæ. JUSS.)

13. Mono-perigynæ.

Order 182. *Bromeliaceæ*. JUSS.

Perianth tubular, six-cleft, in two rows: the outer persistent, the inner petaloid, marcescent or deciduous. Stamens six (rarely more), inserted into the base of the segments of the perianth. Ovarium either entirely free, or cohering more or less with the tube of the perianth, three-celled: ovules indefinite: style single: stigma three-parted, often twisted. Fruit capsular or succulent, three-celled. Seeds indefinite. Embryo cylindrical, recurved, lying in the base of a farinaceous albumen.—Plants, with

scarcely any stem. Leaves rigid, channelled, often thorny or toothed at the margin.—Ex. *Bromelia*, *Tillandsia*.

Sometimes the fruits in the same spike cohere together into a mass; by means of the perianth become succulent; and this is the structure of the pine-apple.—The pine-apple is well known. The *Agave Americana* is remarkable for the quick growth of its flower stalk, reaching sometimes to the height of thirty feet in ten days; and as its growth is most rapid at first, one may almost see its progress. The scape of several species, when withered, is cut into slices for razor strops, for which it is well adapted, on account of a very small portion of silica it is supposed to contain among the cellular substance. The fibres of the leaves of some of these species serve for making cordage.

Order 183. *Smilacææ*. R. BROWN.

Perianth petaloid, six-parted. Stamens six, inserted into the base of the divisions of the perianth, rarely hypogynous. Ovarium free, three-celled: ovules one or several in each cell: style usually three-cleft: stigmas three. Fruit a globose berry. Seeds with a membranaceous (neither black nor crustaceous) testa. Albumen fleshy, cartilaginous. Embryo often remote from the hilum.—Herbaceous or suffrutescent plants, often climbing. Leaves with the veins sometimes reticulated.—Ex. *Smilax*, *Paris*, *Convallaria*.

Between *Dioscoreæ* and *Asphodeleæ*, from which last it is principally distinguished by the testa of the seed.—The species are in general diuretic. The roots of *Trilium* are emetic.

Order 184. *Asphodelineæ*.

Suborder 1. *Asphodeleæ*. R. BROWN. Perianth petaloid, six-divided, regular. Stamens six, inserted upon the perianth, or hypogynous; the three opposite the outer segments of the perianth sometimes unlike the others, or wanting, anthers bursting inwardly. Ovarium free, three-celled, rarely apocarpous: ovules two ascending, or many, in each cell: style one: stigma entire, or shortly three-lobed. Fruit either a capsule, three-celled, three-valved, loculicide; or fleshy, and then sometimes tripartite. Seeds with a black, crustaceous, brittle testa. Embryo included in a fleshy albumen.—Herbaceous plants or trees. Leaves with parallel veins. Peduncles articulated at their middle or near the apex.—Ex. *Asphodelus*, *Scilla*, *Aloe*, *Asparagus*.

Suborder 2. *Gilliesiææ*. LINDL. Perianth six- (or, by the cohesion of the two outer anterior segments, five-) parted, in a double row: the outer herbaceous, the inner more coloured: estivation twisted. Stamens in a double series; outer sterile, forming either a six-toothed urceolus or three scale-like bodies, of which the anterior (*labellum*) is very dissimilar to the others; inner of six fertile stamens, or a six-toothed urceolus, of which the three anterior teeth alone bear anthers. Ovarium free, three-celled: ovules numerous: style one: stigma simple. Capsule three-celled, three-valved, loculicide. Seeds numerous: testa black and crustaceous. Embryo curved in the midst of a fleshy albumen.—Herbaceous plants with tunicated bulbs. Leaves grass-like. Flowers umbellate, arising from spathaceous bractæ.—Ex. *Gilliesia*, *Miersia*.

Gilliesiææ is a singular suborder; and even the view we have taken is neither that of Lindley nor Hooker. They regard our perianth as bracteal or involucreal leaves, and the outer row of stamens as the perianth; we consider the whole structure as elucidated by that of the *Amomeæ*. The inner row of the perianth appears at first sight to consist of only two of the parts, while the others seem external, but in estivation that series is formed of three of them. The outer series of stamens (sterile) has subulate appendages projected outwardly from the base. The As-

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phodelineæ are most certainly distinguished from their allies by the black brittle testa of the seed.—All species, at least of the Asphodeleæ, contain a bitter stimulant principle in a gummy viscid juice. The onion, leek, garlic, and their allies, belong to the genus *Allium*. The roots of several are purgative; the Aloes are well known for this property. Gum Dragon is the styptic juice of *Dracena Draco*.

Order 185. *Liliaceæ*. JUSS.

Perianth coloured, regular, six-divided. Stamens six, perigynous, opposite the segments of the perianth. Ovary free, three-celled: ovules indefinite: style one: stigma simple or three-lobed. Capsule three-celled, three-valved, loculicidal. Seeds numerous, usually flat, packed one above the other in one or two rows: testa spongy, dilated, often winged. Embryo straight, in the axis of a fleshy albumen: radicle next the hilum.—Plants with scaly bulbs or arborescent stems. Leaves with parallel veins.

Tribe 1. *Tulipeæ*. D. C. Perianth deeply divided.—Ex. *Lilium*, *Fritillaria*, *Erythronium*.

Tribe 2. *Hemerocallideæ*. R. BROWN. Perianth tubular.—Ex. *Hemerocallis*, *Polyanthes*.

Closely allied to the last order, and also to Melanthaceæ, through *Erythronium*. We can scarcely conceive why this last has been sometimes placed in Asphodeleæ; for the testa is brown and spongy, and not black and crustaceous. The roots of most of the species of *Lilium* found in the east of Siberia, particularly *L. spectabile*, *ternifolium*, and *Kamtschaticum*, are eaten like potatoes, and known by the name of Sarana (Саpаha, Russ.)

Order 186. *Melanthaceæ*. BATSCH.

Perianth petaloid, six-divided, the margin of the segments generally involute in estivation. Stamens six: anthers usually bursting outwards. Ovary three-celled: ovules numerous: style trifid or tripartite: stigmas three, undivided. Capsule three-celled, usually septicidal, sometimes loculicidal. Seeds with a membranous testa. Albumen dense, fleshy.—Leaves sheathing at the base, with parallel veins.—Ex. *Melanthium*, *Colchicum*, *Tofieldia*.

This order requires revision. The positive characters separating it from Liliaceæ, depending on the divided style, are slight.—Every species is poisonous, but particularly the genera *Colchicum* and *Veratrum*.

Order 187. *Pontederiaceæ*. KUNTH.

Perianth tubular, coloured, six-cleft, more or less irregular: estivation circinate. Stamens three or six, unequal, perigynous. Ovary free, or sometimes coherent at the base, three- (or rarely one-) celled: ovules indefinite: style one: stigma simple. Capsule three- (rarely one-) celled, three-valved, loculicidal. Seeds indefinite: testa membranous: hilum small. Embryo straight, in the axis of a somewhat farinaceous albumen: radicle next the hilum.—Aquatic or marsh plants. Leaves sheathing at the base: veins parallel.—Ex. *Pontederia*, *Heteranthera*, *Lepanthus*.

Distinguished from Asphodeleæ by the testa of the seed: the syncarpous ovary and perigynous stamens separate them from Alismaceæ.

Order 188. *Restiaceæ*. R. BROWN.

Suborder 1. *Restiæ*. Perianth 2-6-partite, sometimes wanting. Stamens definite, perigynous, 1-6; when half as many as the segments of the perianth they are opposite the inner divisions: anthers usually one-celled. Ovary one or more-celled: ovules solitary, pendulous. Fruit capsular or nucamentaceous. Seeds pendulous. Embryo lenticular, on the outside of a farinaceous albumen, at the extremity remote from the hilum.—Herbaceous or suffrutescent plants. Leaves simple, narrow, or none. Culms naked, or protected by sheaths, which are usually slit (en-

tire in *Eriocaulon* alone), with the one margin overlapping the other. Flowers in spikes or capitula, separated by bracteolæ or scales, and usually unisexual.—Ex. *Restio*, *Centrolepis*, *Elegia*, *Eriocaulon*.

Suborder 2. *Xyrideæ*. KUNTH. Perianth six-parted, in two rows; outer glumaceous; inner petaloid, unguiculate. Stamens six, three fertile inserted upon the apex of the claw of the segments of the inner row of the perianth: anthers bursting outwardly. Ovary single: ovules indefinite: style trifid: stigmas obtuse, multifid or undivided. Placentas three, parietal. Capsule one-celled, three-valved. Seeds numerous. Embryo on the outside of a farinaceous albumen, at the extremity remote from the hilum.—Herbaceous plants. Leaves radical, with dilated, equitant, scarious bases. Culms naked. Flowers in terminal capitula.—Ex. *Xyris*, *Abolhoda*.

Closely allied to Junceæ and also to Cyperaceæ, from which it is distinguished by the position of the embryo.—The leaves and roots of *Xyris Indica* are employed against the itch and leprosy. The tough wiry stems of *Willdenovia teres* and some others are manufactured into baskets and brooms.

Order 189. *Junceæ*. JUSS.

Perianth six-parted, more or less glumaceous. Stamens six, inserted into the base of the segments, sometimes only three and opposite the outer series: anthers two-celled. Ovary 1-3-celled: ovules one, three, or many, in each cell: style one: stigmas generally three, sometimes only one. Fruit capsular, three-valved, loculicidal, sometimes indehiscent. Seeds with a testa neither black nor crustaceous. Embryo inclosed within a firm, fleshy, or cartilaginous albumen, seated near the hilum.—Herbaceous plants. Leaves fistular, or channelled, or flat, with parallel veins.—Ex. *Juncus*, *Luzula*.

Related to the Restiaceæ and Asphodeleæ, as also to the Palmæ.—The leaves of *Flagellaria* are supposed to be astringent: the others have no particular medical properties. Different species of *Juncus* are used for making chair-bottoms, mats, &c., and the pith for the wicks of candles.

Order 190. *Palmæ*. JUSS.

Flowers bisexual or polygamous. Perianth six-parted, persistent, in a double row; the three outer segments often smaller, the three inner sometimes deeply connate. Stamens inserted into the base of the perianth, usually six, seldom three, in a few polygamous genera indefinite in number. Ovary one-three-celled, or deeply three-lobed: ovules three, rarely one. Fruit baccate or drupaceous, the flesh fibrous. Albumen cartilaginous, either ruminate, or furnished with a central or lateral cavity. Embryo cylindrical, or flat and circular, small, usually at a distance from the hilum, lodged in a lateral cavity at the opposite side from the empty cavity of the albumen.—Trunk arborescent, simple, occasionally shrubby and branched. Leaves terminal, large: vernation plaited. Spadix terminal, often branched; spathe one or many-valved.—Ex. *Sabal*, *Phoenix*, *Calamus*, *Borassus*, *Areca*, *Cocos*.

We have already said that there was a relation between this and the Junceæ. Pandanææ seems to have no affinity; but between *Calamus* and Gramineæ, particularly the bamboo, many points of comparison present themselves.—Wine, oil, wax, flour, sugar, salt, thread, utensils, weapons, habitations, and food, are obtained from this order. The cocoa-nut, sago, date, and betel-nut, are well known. The common cane that is imported is a species of *Calamus*. The name Coccineæ may be given to a "section whose principal character consists in the originally trilobular putamen having its cells, when fertile, perforated opposite to the seat of the embryo, and, when abor-

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Arrangement and Characters. tive, indicated by foramina 'cœca.'¹ From the fruits of this section only, the oil afforded by plants of this family is obtained.

B. ENDOGENÆ. D. C.

(14. Monohypogynæ. JUSS.)

14. Monohypogynæ.

Order 191. *Commelineæ*. R. BROWN.

Perianth in two rows; outer herbaceous, tripartite; inner petaloid, tripartite or trifid. Stamens six or fewer, hypogynous: anthers of some filaments either wanting or differently formed from the others. Ovarium three-celled: ovules few in each cell: style one: stigma one. Capsule 2-3-celled, 2-3-valved, loculicide. Seeds often in pairs in each cell: hilum usually linear and lateral. Albumen densely fleshy. Embryo flat and circular (pulley-shaped), lying in a cavity of the albumen, and at the opposite extremity from the hilum: radicle projected from the centre of the embryo.—Herbaceous plants. Leaves usually sheathing at the base.—Ex. *Commelina*, *Tradescantia*.

Not very closely allied to either Juncæ or Restiaceæ. With some Palmæ they agree in the singular embryo: this is flat and circular, and the radicle projects from its centre towards the outside of the seed, thus resembling a pulley and its axis: moreover, in both orders the embryo is remote from the hilum, the radicle pointing away from it, and its position being indicated by an external papilla.

Order 192. *Alismacæ*. R. BROWN.

Suborder 1. *Alismoideæ*. D. C. Perianth six-partite, in two rows; outer herbaceous, inner petaloid. Stamens definite or indefinite, hypogynous. Ovarium of several one-celled carpels, apocarpous: ovules erect or ascending, solitary in each ovary, or in pairs at a distance from each other: styles and stigmas several. Fruits of several dry, indehiscent carpels. Seeds 1-2 in each cell. Albumen none. Embryo cylindrical, curved like a horse-shoe: radicle next the hilum.—Floating plants. Leaves with parallel veins.—Ex. *Alisma*, *Sagittaria*.

Suborder 2. *Butomeæ*. RICH. Perianth six-parted, in two rows; outer usually herbaceous, inner petaloid. Stamens definite or indefinite, hypogynous. Ovarium of three, six, or more, one-celled carpels, apocarpous or syncarpous: ovules very numerous in each cell: stigmas simple, as many as the carpels. Placentas ramified over the inner surface of each carpel. Fruit of several follicles, distinct and rostrate, or cohering into one mass. Seeds minute, indefinite. Albumen none. Embryo straight, or curved like a horse-shoe: radicle next the hilum.—Aquatic plants. Leaves with parallel veins, often possessing a milky juice. Flowers in umbels.—Ex. *Butomus*, *Limncharis*.

Suborder 3. *Juncagineæ*. RICH. Perianth herbaceous, rarely wanting. Stamens six, hypogynous. Ovarium of three or six carpels, cohering firmly together: ovules one or two in each carpel, erect, approximated at their base. Fruit dry. Seeds 1-2, erect. Albumen 0. Embryo straight: radicle at the opposite extremity from the hilum: plumule emitted through a lateral cleft in the embryo.—Herbaceous bog-plants. Leaves ensiform: veins parallel. Flowers in spikes or racemes, minute.—Ex. *Triglochin*, *Scheuchzeria*.

The limits of this order are not perhaps yet well understood. According to Mirbel, the radicle in every embryo, curved like a horse-shoe, is actually at the apex, although by the curvature of the seed it may appear close to the hilum; and if this view be correct, Alismacæ ought to consist of Alismoideæ (to which might be attached *Limncharis* and the other genera of Butomeæ with a curved

embryo), with perhaps the addition of Potameæ; while *Butomus* and *Juncagineæ*, both with a decidedly orthotropous embryo, ought to be rejected. The apocarpous ovary of Alismoideæ makes this hold the same rank among the Monocotyledones that is done by Ranunculaceæ among the higher organized vegetables.—Alismoideæ and Butomeæ have an acrid herbage.

Order 193. *Pandaneæ*. R. BROWN.

Flowers unisexual or polygamous, wholly covering the spadix. Perianth 0. Filaments of the stamens with a single two-celled anther. Ovaria one-celled, united together in groups: ovules usually solitary, erect: stigma, one to each ovary, sessile, adnate. Fruit either fibrous drupes, collected several together, or baccate and plurilocular. Seeds in the drupes solitary, in the baccate genera several in each cell. Embryo in the axis of a fleshy albumen: radicle pointing to the hilum: plumula inconspicuous.—Stem arborescent. Leaves imbricated in three rows, long, amplexicaul, with the margin usually thorny.—Ex. *Pandanus*, *Freyinetia*.

Usually placed next the palms, but in reality much more nearly allied to Aroideæ (Typhaceæ), of which Kunth makes it a section.—The seeds of *Pandanus* are eatable, as well as the flowers of *P. odoratissimus*; the fruit of several is used as an article of food.

Order 194. *Aroideæ*. JUSS.

Suborder 1. *Typhaceæ*. D. C. Flowers unisexual, arranged upon a naked spadix. Perianth three-parted. Stamens three or six, opposite to the segments of the perianth: filaments long and slender: anthers wedge-shaped, erect, bursting outwardly. Ovarium single, free, one-celled: ovule solitary, pendulous: style short: stigmas one or two, linear, simple. Fruit dry, indehiscent, one-celled. Embryo in the centre of a farinaceous albumen, straight, cylindrical: radicle next the hilum: cotyledon cylindrical, with a short longitudinal lateral cleft near its base: plumule of 2-3 leaves, the outer contained in the cleft of the cotyledons, and partly protruded.—Herbaceous marsh plants. Stems without nodi. Leaves sheathing at their base, rigid, ensiform, with parallel veins.—Ex. *Typha*, *Sparganium*.

Suborder 2. *Arineæ*. Flowers uni-, rarely bisexual, arranged upon a spadix, often naked. Perianth 4-6-partite, or wanting. Stamens definite and opposite the lobes of the perianth, or indefinite, hypogynous: filaments very short: anthers 1-2- or many-celled, ovate, bursting outwardly. Ovarium free, one-celled, rarely three-celled: ovules several, rarely solitary, ascending, peritropal, or rarely pendulous: stigma sessile. Fruit succulent or dry, indehiscent. Seeds solitary or several. Embryo in the axis of a fleshy or farinaceous albumen (which is rarely wanting), straight, cylindrical: radicle next the hilum, rarely at the opposite extremity: cotyledon cylindrical, with a short lateral cleft near its base: plumule 2-3-leaved, the outer leaf contained in the cleft of the cotyledon, and partly protruded.—Herbaceous or suffrutescent plants. Root often tuberous or thickened. Leaves sheathing at the base, with parallel or branching veins, often cordate, entire, or sometimes divided. Spadix usually inclosed in a spatha.—Ex. *Arum*, *Caladium*, *Pothos*, *Acorus*.

Suborder 3. *Pisticeæ*. RICH. Flowers unisexual, inclosed in the same spatha. Stamens definite, 2-7, in a spatha. Ovarium one in each spatha, one-celled: ovules two or several, erect or horizontal: style short: stigma simple. Fruit membranous, one-celled, indehiscent. Seed one or several: testa thick and spongy: chalaza thick, adhering to the apex of the cotyledon, and separable from the integuments. Embryo either large in the axis of a

¹ Brown, in Tuckey's *Voyage*, p. 456.

thin and fleshy albumen, with a lateral cleft for the emission of the plumule; or minute at the extremity of a copious farinaceous albumen, most remote from the hilum: radicle pointing to the hilum.—Floating plants. Flowers appearing from the margin of the stems.—Ex. *Pistia*, *Lemna*.

We continue to unite these suborders. The difference between the two first is reduced to the structure of the stamens, for the same number and position of the ovules occurs in both. As to *Pistia*, there is as great a difference between its constituent genera as betwixt either and the true Aroideæ. It is difficult to determine the position of the radicle in *Pistia*; but as the inner integument (tegmen) of the seed is pendulous in the ovule, we are forced to suppose that the radicle points to the hilum, although the embryo itself is at the other extremity, a structure very uncommon. What we suppose the chalaza, Mr Lindley, however, describes as an indurated foramen, and consequently, in both *Lemna* and *Pistia*, the radicle would be turned away from the hilum; but this structure our own observations on *Pistia* do not confirm. The apex of the seed, however, in that genus has a strong depression, or orifice, caused by the separation of the chalaza, and its attachment to the apex of the embryo.—All the Aroideæ are acrid; and this principle is sometimes so strong as to render various species very poisonous. The flat underground stems, and the leaves of many, are however harmless, and, when boiled or roasted, are even nutritive.

Order 195. *Potamææ*. Juss.

Flowers bi- or unisexual. Perianth two or four-parted, often deciduous, sometimes wanting. Stamens definite, hypogynous. Ovarium one or more, free, inserted on the receptacle or central spadix: ovule solitary in each ovary: style one or none: stigma one, entire or rarely two- or three-parted. Fruit dry, indehiscent, one-celled. Seed solitary, pendulous, or suspended. Albumen 0. Embryo straight or curved, with a lateral cleft for the emission of the plumule: radicle very large, inferior, pointing to the extremity remote from the hilum.—Water plants. Leaves very cellular, with parallel veins. Flowers minute.—Ex. *Potamogeton*, *Najas*, *Zostera*.

The structure of the seed of *Zostera* is explained by that of *Ruppia*, where the great mass of the embryo is the radicle with a cleft for the emission of the plumule. If we suppose, with Richard, that in no case is the flower of *Potamææ* bisexual, but that even in *Potamogeton* the perianth is a four-partite spatha, we shall readily see how closely this order approaches to the Aroideæ.—Of little use. *Zostera* is used for packing, and stuffing the beds of the poorer classes.

Order 196. *Podostemææ*. Rich.

Flowers naked, bisexual, bursting through an irregularly lacerated spatha. Stamens hypogynous, definite or indefinite, monadelphous, alternately sterile and shorter. Ovarium free, spuriously two-celled: ovules numerous: styles two or none: stigmas two or three. Placenta forming the dissepiment. Fruit slightly pedicellate, capsular, two-valved, septicide, the valves falling off from the dissepimental placenta. Seeds indefinite, minute.—Herbaceous, branched, floating plants. Leaves capillary or linear, or irregularly lacerated, or minute and imbricated. Flowers minute.—Ex. *Podostemum*, *Lacis*, *Mniopsis*.

The internal structure of the seed is still unknown. Martius says it is homogeneous; but we may rather compare them with the seeds of such *Potamææ* as consist almost entirely of an immense radicle; and there are many other points of resemblance between the two orders. Mr Lindley arranges *Podostemææ* between *Piperacææ* and *Callitrichinææ* (Haloragææ).—No properties are known.

Order 197. *Cyperacææ*. Juss.

Flowers bi- or unisexual, furnished each with a soli-

itary bracteole called a *glume* or *scale*, which are imbricated on a common axis. Perianth rarely membranaceous, 2-3-valved, the valves distinct or united: generally entirely wanting. Stamens hypogynous, definite (1-12), with sometimes an additional row of abortive filaments or *setæ*: anthers erect, two-celled: ovary one-celled: ovule one, erect: style single, three-cleft or bifid: stigmas undivided, or occasionally bifid. Fruit an achenium or nut. Embryo lenticular, seated at the base of a farinaceous albumen, and covered by a very thin membranous projection of it: plumule inconspicuous.—Roots fibrous. Stems often without joints. Sheaths of the leaves entire.—Ex. *Cyperus*, *Scirpus*, *Scleria*, *Carex*.

We have slightly altered the character of the order from that usually given; for while we consider *Carex* and some others to have a true perianth, we cannot regard the hypogynous *setæ* of authors in the same light, they being more analogous to abortive stamens, and consequently to a corolla. The *Cyperacææ* are closely allied to the *Graminææ*.—The herbage of this order contains almost no nutritive principle. The roots of some are succulent, and possess diaphoretic and demulcent properties: those of *Cyperus esculentus* are said to be eaten; those of *Cyperus longus* are bitter and tonic; those of *Cyperus odoratus* have a warm aromatic taste. The *Cyperus Papyrus* yielded the paper of the Egyptians. Some species of *Scirpus* are used for making chair bottoms.

Order 198. *Graminææ*. Juss.

Flowers usually bisexual, sometimes unisexual or polygamous; one, two, or more being seated on a common rachis, which is contained within an involucre, that consists of one or two valves (*glumes*), or is rarely wanting; the whole constituting a *locusta*. Partial involucre similar to the glumes, of two (rarely one) dissimilar valves (*glumellæ* or *paleæ*); outer or lower simple, usually carinate: inner with two nerves or keels, and hence formed of two pieces cohering by their contiguous margins. Lodicule (abortive stamens?) of two (rarely one) hypogynous minute scales, sometimes wanting. Stamens hypogynous, 1-6, or rarely indefinite: anthers two-celled, versatile: ovary simple: ovule one: style one, bipartite, rarely simple or tripartite: stigmas plumose or hairy. Pericarp a caryopsis. Albumen farinaceous. Embryo lenticular, external, lying on one side of the albumen near its base.—Culms cylindrical, hollow, jointed. Leaves alternate: sheath split. Locustæ of flowers arranged in spikes, racemes, or panicles.—Ex. *Panicum*, *Avena*, *Anthoxanthum*.

The above, with some slight variations, is the account of the structure of these plants most usually adopted. Some botanists term the partial involucre the perianth, others view the lodicule in that light; perhaps if a perianth be present, it must be looked for in the upper glumella alone. Their affinity with *Cyperacææ* is evident.—This order, whether as furnishing food to man or beast, is one of the most important in the whole vegetable kingdom. Wheat, barley, oats, rice, guinea corn, millet, maize, and the sugar-cane, belong to it. The cuticle contains a large quantity of silex. This abounds so much in the sugar-cane, that by the mere using that plant for fuel in the extraction of sugar, the fire-place is soon choked up by large masses of a coarse kind of glass. The siliceous matter of the bamboo is often secreted at the diseased joints, and forms the mineral called Tabasheer. The straw of different grasses is plaited, and made into ladies' bonnets: that used at Leghorn is the *Hordeum pratense*, which also grows wild in our own country. Seringe's *Herbarium Cereale*, with the accompanying descriptions in his *Malanges Botaniques*, deserve to be carefully studied by such as principally attend to the uses of this tribe of plants,

Arrangement and Characters.

Arrange-
ment and
Characters.

15. Acoty-
ledones.
§ 1. Duc-
tulosæ.

II.—CELLULARES. D. C.

(15. ACOTYLEDONES. JUSS. § 1. DUCTULOSÆ.¹)

Order 199. *Equisetaceæ*. D. C.

Sporules surrounded by elastic clavate filaments, and inclosed in thecæ arising from the scales of terminal cones.—Vernation straight.—Ex. *Equisetum*.

The cuticle abounds in silex, and hence the plants of the only genus of this order are very useful for polishing furniture, &c.

Order 200. *Filices*. JUSS.

Sporules inclosed in thecæ arising from the back or margin of the fronds, or rarely without thecæ seated on the back of a deformed frond (LINDL.).—Vernation circinate, in those without thecæ straight.—Ex. *Polypodium*, *Gleichenia*, *Osmunda*, *Danæa*, *Ophioglossum*, *Parkeria*.

Adopting Mr Lindley's views already explained relative to the formation of the thecæ of ferns, he is led to the conclusion that *Ophioglossum* and its allies have no thecæ, but that what is there called so are merely the involute contracted segments of the deformed frond that bears the sporules.—The fronds generally contain an astringent mucilage, and are thus considered as pectoral and lenitive. A few species have been employed for food. The caudex of *Aspidium Filix mas*, and *Pteris aquilina*, being bitter and astringent, have been used as anthelmintics, emmenagogues, and purgatives. *Aspidium fragrans* has been employed as a substitute for tea.

Order 201. *Marsiliaceæ*. R. BROWN.

Sporules inclosed in thecæ which are contained within closed involucre.—Ex. *Marsilea*, *Salvinia*.

Their properties are entirely unknown.

Order 202. *Lycopodiaceæ*. SWATZ.

Sporules inclosed in axillary thecæ.—Vernation circinate.—Ex. *Lycopodium*, *Isotetes*.

The minute pulverulent matter contained in the one kind of thecæ is highly inflammable, and is collected on the continent in considerable quantities, particularly from *Lycopodium clavatum*. It is used for artificial lighting in the theatres. *Lyc. clavatum* and *L. Selago* excite vomiting.

II.—CELLULARES. D. C.

(15. ACOTYLEDONES. JUSS. § 2. EDUCTULOSÆ.)

Order 203. *Musci*. JUSS.

Sporules contained in thecæ closed by an operculum or lid, which falls off or is rarely adnate.—Stem with leafy appendages.—Ex. *Hypnum*, *Gymnostomum*, *Andræa*.

Of little or no use, except for packing.

Order 204. *Hepaticæ*. JUSS.

Sporules contained in thecæ which are dehiscent (or rarely indehiscent), and destitute of an operculum.—Plants with leafy appendages.—Ex. *Marchantia*, *Jungermannia*.

Some species are slightly fragrant, but little is known of their properties.

Order 205. *Algæ*. JUSS.

Plants without leafy appendages, and with very few exceptions found in water. Sporules variously disposed.—Ex. *Fucus*, *Ulva*, *Conferva*, *Chara*.

The *Hæmatococcus nivalis*, or red snow plant, belongs to this order.—The algæ are of considerable importance in our manufactures and domestic economy. "*Rhodomenia palmata*, the dulce of the Scots, dilleek of the Irish,

and saccharine *Fucus* of the Icelanders, is consumed in considerable quantities throughout the maritime countries of the north of Europe, and in the Grecian archipelago; *Iridæa edulis* is still occasionally used both in Scotland and the south-west of England. *Porphyra laciniata* and *vulgaris* is stewed, and brought to our tables as a luxury under the name of Laver, and even the *Ulva latissima*, or green Laver, is not slighted in the absence of the *Porphyra*. *Enteromorpha compressa*, a common species on our shores, is regarded, according to Gaudichaud, as an esculent by the Sandwich islanders. *Laurentia pinnatifida*, distinguished for its pungency, and the young stalks and fronds of *Laminaria digitata* (the former called Pepperdulse, the latter Tangle) were often eaten in Scotland; and even now, though rarely, the old cry, 'buy dulse and tangle,' may be heard in the streets of Edinburgh. When stripped of the thin part, the beautiful *Alaria esculenta* forms a part of the simple fare of the poorer classes of Ireland, Scotland, Iceland, Denmark, and the Faroe Islands. To go farther from home, we find the large *Laminaria pottorum* of Australia furnishing the Aborigines with a proportion of their instruments, vessels, and food. On the authority of Bory St Vincent, the *Durvillea utilis* and other *Laminariæ* constitute an equally important resource to the poor on the west coast of South America. In Asia several species of *Gelidium* are made use of to render more palatable the hot and biting condiments of the East. Some undetermined species of this genus also furnish the materials of which the edible swallows' nests are composed. It is remarked by Lamaroux that three species of swallow construct edible nests, two of which build at a distance from the sea coast, and use the sea-weed only as a cement for other matters. The nests of the third are consequently most esteemed, and sold for nearly their weight in gold. *Gracillaria lichenoides* is highly valued for food in Ceylon and other parts of the East, and bears a great resemblance to *G. compressa*, a species recently discovered on the British shores, and which seems to be little inferior to it. It is not to mankind alone that marine Algæ have furnished luxuries or resources in times of scarcity. Several species are greedily sought after by cattle, especially in the north of Europe. *Rhodomenia palmata* is so great a favourite with sheep and goats, that Bishop Gunner named it *Fucus ovinus*. In some of the Scottish islands, horses, cattle, and sheep, feed chiefly upon *Fucus vesiculosus* during the winter months; and in Gothland it is commonly given to pigs. *Fucus serratus* also, and *Chorda Filum*, constitute a part of the fodder upon which the cattle are supported in Norway. In medicine we are not altogether indebted to the Algæ. The *Gigartina helminthocorton*, or Corsican moss, as it is frequently called, is a native of the Mediterranean, and held once a considerable reputation as a vermifuge. The most important medical use, however (omitting minor ones), derived from sea-weeds, is through the medium of Iodine, which may be obtained either from the plants themselves or from kelp. French kelp, according to Sir H. Davy, yields more Iodine than British; and, from some recent experiments made at the Cape of Good Hope by M. Ecklon, *Laminaria buccinalis* is found to contain more than any European Algæ. Iodine is known to be a powerful remedy in cases of goitre. But were the Algæ neither 'really serviceable either in supplying the wants, or in administering to the comforts, of mankind' in any other respect, their character would be redeemed by their usefulness in

¹ De Candolle arranges these, as has already been seen, among the Endogenæ; we have stated our reasons for their removal here. The structure of each order of the Cellulares we have already described at sufficient length, and shall therefore refer to p. 37 and p. 53.

Ex. the arts; and it is highly probable that we shall find ourselves eventually infinitely more indebted to them. One species (and I regret to say that it is not a British one) is invaluable as a glue and varnish to the Chinese. This is the *Gracillaria tenax*, the *Fucus tenax* of Turner's *Historia Fucorum*. Though a small plant, the quantity annually imported at Canton from the provinces of Tokien and Tchekiang is stated by Mr Turner to be about 27,000 pounds. It is sold at Canton for 6d. or 8d. per pound, and is used for the purposes to which we apply glue and gum-arabic. The Chinese employ it chiefly in the manufacture of lanterns, to strengthen or varnish the paper, and sometimes to thicken or give a gloss to silks or gauze. In addition to the above account, the substance of which I have extracted from Mr Turner's work, Mr Neill remarks that 'it seems probable that this is the principal ingredient in the celebrated gummy matter called Chin-chow, or Hai-tsai, in China and Japan. Windows made merely of slips of bamboo, crossed diagonally, have frequently their lozenge-shaped interstices wholly filled with the transparent gluten of the Hai-tsai.' On the southern and western coasts of Ireland, our own *Chondrus crispus* is converted into size for the use of the house-painters, &c., and, if I be not erroneously informed, is also considered as a culinary article, and enters into the composition of blanc-mange, as well as other dishes. In the manufacture of kelp, however, for the use of the glass-maker and soap-boiler, it is that the Algæ take their place among the most useful vegetables. The species most valuable for this purpose are, *Fucus vesiculosus*, *nodosus*, and *serratus*; *Laminaria digitata* and *bulbosa*; *Himanthalia lorea*, and *Chorda Filum*.¹

Order 206. *Lichenes*. Juss.

Plants not growing in water, without leafy appendages. Sporules lying in superficial disc.—Ex. *Parmelia*, *Ramalina*.

Some Lichens were formerly supposed to grow in water. This is still allowed by Fries, but he denies that they ever fructify there; and he has further observed, that several of what were termed Algæ, upon being removed from that element and exposed to the sun, produce shields and become Lichens. "Lichens," says De Candolle, "present two classes of properties, 1st, the dyeing properties, which are developed by different agents, and especially by maceration in urine, properties which are common to all the species, but particularly to such as approach most to the consistence of a calcareous crust; 2d, medicinal properties, which are most sensible in those species that are soft, whether it be that these contain more mucilage, or that they have been most experimented upon." The Iceland moss of the shops, which is the *Cetraria Islandica*, is tonic, demulcent, and nutrient; and several others are nearly equally suited to the same purpose. The Orchale or Archill, and Cudbear, of various kinds, are all famed for the dye they give out.

Order 207. *Fungi*. Juss.

Plants not growing in water, and without leafy appen-

dages. Sporules in the substance of the plants, the whole of which may be viewed as organs of reproduction.—Ex. *Sphæria*, *Agaricus*, *Lycoperdum*, *Mucor*, *Uredo*.

This order presents many anomalies. Some are wholesome, others extremely poisonous; nor does this diversity of property seem at all connected with their external forms, many most allied in appearance being extremely distinct in their virtues; and the difficulty of distinguishing the two kinds is known by all who have turned their attention to the subject. In this country, therefore, scarcely more than one or two mushrooms are eaten; in France, Italy, and Germany, more are used; and in Russia many are employed which are elsewhere considered as poisonous. Either the climate or the mode of cooking must thus operate in rendering these wholesome. The dry rot is caused by several species of parasitical Fungi, as *Polyporus destructor*, *Merulius vastator* and *lacrymans*, &c. The blights in corn, mildew, smut, and ergot, are also Fungi of the same description. Mouldiness, whether in cheese or on books, is also constituted of small parasitical Fungi, and is best prevented by the presence of an essential oil. Amadou or German tinder is prepared from some kinds of *Boletus* (as *B. ignarius* and *fomentarius*), and afterwards impregnated with nitre.

We have now presented an account of all the natural General orders of plants acknowledged up to the present time; and, on studying their characters, we are forced to draw the following conclusions. 1. That the difference between an ovary free, or adherent with the tube of the calyx, is weakened by many genera, as by comparing the Loasææ with the allied family of Turneraceæ, and by the genera of Dip-

saceæ, in which the ovary is adherent at the apex and not below. 2. The difference between hypogynous and perigynous stamens is often imperceptible, this depending on the greater or less expansion of the torus: the same may be said of the epigynous and gynandrous insertions. 3. Loculicide or septicicide dehiscence of the fruit depends only on the greater or less adhesion of the sides, or of the middle of the valves; both, in certain states, being liable, to dehisce. 4. The parietal placenta is merely that modification of the other kind in which the introflexed margin of the valves is little apparent. 5. Petals may be accidentally more or less combined by their margins into a gamopetalous corolla, or may be entirely absent; so that there is no limit between gamopetalous, polypetalous, and apetalous orders. 6. Stamens may be more or less combined, or distinct. 7. Stamens may become abortive, and even change into petals. 8. St Hilaire has shown that there are many ambiguous states in the relative positions of the radicle of the embryo and the hilum of the seed.

Thus the great characters for defining natural orders are impaired. To none in particular can we trust at all times; and it is only by a combination of several tolerably constant ones that, in the present state of our knowledge, we can attain that most desirable end of botanical classification, the natural approximation of genera. (U. U.)

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¹ Greville's *Algæ Brit.* p. xix.

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Botticelli.

BOTANY BAY, a spacious bay on the south-east coast of New Holland, so named by Captain Cook, by whom it was discovered in 1770, from the profusion of hitherto unknown plants growing on its shores. Great Britain has established a settlement here for transported criminals. The bay does not afford either good shelter or anchorage, the water being too shallow for large vessels, which must remain exposed to all the dangers of an open road; and on this account the British settlement, though it still retains the name of Botany Bay, is at some miles distance. See AUSTRALASIA, and WALES, NEW SOUTH.

BOTANOMANCY (from *βοτανη*, an herb, and *μαντια*, divination), an ancient species of divination, by means of plants, especially of sage and fig leaves. The manner of performing it was this: The persons who consulted wrote their own names and their questions on leaves, which were exposed to the wind; and as many of the letters as remained in their own places were taken up, joined together, and considered as an answer to the question.

BOTH, JOHN and ANDREW, Flemish painters, and pupils of Bloemart, were born at Utrecht about the year 1610.

The union of these brothers was remarkable; they were alike inseparable in their studies, their travels, and their painting. John painted the landscape part of their pictures in the manner of Claude Lorrain, and Andrew drew the figures and animals in the style of Bamboche. They both died in 1650; Andrew having been drowned at Venice, and his brother John, through grief, having soon afterwards followed him to the grave. In the national gallery of France there is a painting by these two masters representing a *View of Italy at Sunset*.

BOTHNIA. See RUSSIA.

BOTTICELLI, ALESSANDRO, born at Florence in 1437, learned the rudiments of painting under Filippo Lippi. He executed several pictures for Pope Sixtus IV. and for the city of Florence, for which he received large sums of money; but he expended all his acquisitions in thoughtless extravagance, and at last died in great distress, aged seventy-eight. He was not only a painter, but a man of letters. Baldini, according to the general report, communicated to him the secret of engraving, then newly discovered by Finigucrra, their townsman. The famous edition

Bottle
li
Bottrigari.

of Dante's *Inferno*, printed at Florence by Nicholo Lorenzo della Magna in 1481, and to which, according to some authors, Botticelli undertook to write notes, was intended to have been ornamented with prints, one for each canto; and of these prints, as many as were finished were designed, if not engraved, by Botticelli. It is remarkable that the two first plates only were printed upon the leaves of the book, and, for want of a blank space at the head of the first canto, the plate belonging to it is placed at the bottom of the page. Blank spaces are left for the rest, that as many of them as were finished might be pasted on. The two first, as usual, are printed on the leaves; while the others, seventeen in number, which follow regularly, are pasted on the blank spaces; and these, apparently, were all that Botticelli ever executed. About the year 1460 he is said to have engraved a set of plates, representing the *Prophets and Sibyls*. Basan tells us that he marked these plates with a monogram composed of the two first letters of the alphabet joined together.

BOTTLE, a small vessel for containing liquors, and made of leather, of glass, or of stone. The word is formed from *butellus* or *botellus*, a barbarous Latin word for a small wine vessel; and a diminutive of *bota*, which denoted a but or cask of that liquor. The ancient Jewish bottles were made of the skins of goats or other wild beasts, with the hair on the inside, well sewed and pitched together; and an aperture in one of the paws served for the mouth of the vessel. Bottles are now chiefly made of thick coarse glass; but bottles of boiled leather are likewise made and sold by the case-makers. Fine glass-bottles, covered with straw or wicker, are called *flasks* or *bettees*. The quality of the glass has sometimes been found to affect the liquor in the bottle.

BOTTOM, in a general sense, denotes the lowest part of a thing, in contradistinction to the top or uppermost part.

BOTTOM, in *Navigation*, is used to denote as well the channel of rivers and harbours, as the body or hull of a ship. Thus, in the former sense, we say, *gravelly bottom*, *clayey bottom*, *sandy bottom*, and so forth; in the latter, a *British bottom*, a *Dutch bottom*, and the like.

BOTTOMRY, *fenus nauticum*, is a term applied to that particular kind of transaction where a person lends money to a merchant, who wants it to traffic, and is to be paid a greater sum at the return of a certain ship, standing to the hazard of the voyage; and, in this case, although the interest be greater than that allowed by law, it is not usury.

BOTTONY. A cross bottony, in *Herakdry*, terminates at each end in three buds, knots, or buttons, resembling in some measure the three-leaved grass; on which account Segoie, in his *Trésor Heraldique*, terms it *croix trefflée*. It is the badge of the order of St Maurice.

BOTTOSCHANY, a city of the province of Moldavia, in European Turkey. It is situated on a river of the same name, which falls a little below into the Siena. It consists chiefly of wooden houses, and has several Greek churches and monasteries, with 4200 inhabitants, who have a considerable trade in wine, cattle, wool, honey, wax, and tobacco. During the continental system the Jews and Armenians of Bottoschany carried on a great smuggling trade in sugar, coffee, and other colonial goods, with Brody, Leipsic, and Brunn.

BOTTRIGARI, HERCOLE, a person eminently skilled in the science of music, though not a musician by profession, was descended of a noble family of Bologna, and born in that city in the year 1531. He seems to have entertained a strong predilection in favour of the ancient music; and he attempted, as Vincentine and others had done, to introduce the chromatic scale into practice, but with no better

success than had attended the endeavours of his predecessors. He corrected Gogavino's Latin version of Ptolemy in numberless instances, and to so good purpose, that Dr Wallis has in general conformed to it in the translation of the same author, which he gave to the world many years afterwards. He also translated into Italian *Boetius de Musica*, with as much of Plutarch and Macrobius as relates to music; and besides this, he made annotations upon Aristoxenus, Franchinus, Spataro, Vicentino, Zarlino, Galislei, and, in short, on almost every musical treatise he could lay his hands on, as appears by the copies once belonging to him, which are now deposited in many libraries in Italy. Bottrigari's works contain greater proofs of his learning and skill in music, than of his abilities as a writer, his style being remarkably inelegant. Nevertheless, he affected the character of a poet; and there is extant a collection of poems by him, in 8vo, printed in 1557. Walther represents him as an able mathematician, and a collector of curiosities; and says that he was possessed of a cabinet which the emperor Ferdinand II. had a great desire to purchase. He died in 1612, and not in 1609, as stated by Mazzuchelli. From what has been said, a general idea may be formed of his works, a small portion of which only has been printed, and a correct list cannot now be obtained.

BOTTS. See ENTOMOLOGY, *Index*.

BOTZEN, a city, the capital of the circle of the Etsch, in the Austrian province of Tyrol. It is situated at the junction of the rivers Isach and Talfer, on the road from Germany to Italy, with both of which countries great commerce is carried on at four large fairs held annually here. It was destroyed by fire during the hostilities of 1809, but is now rebuilt, and contains about 4000 inhabitants. There are some considerable silk manufactories in the city. Long. 12. 3. E. Lat. 46. 47. 30. N.

BOUCHE OF COURT, the privilege of having meat and drink at court scot-free. This privilege is sometimes only extended to bread, beer, and wine. It was a custom anciently in use, as well in the houses of noblemen as in the king's court. Thomas earl of Lancaster retained Sir John de Ewre to serve him with ten men at arms in time of war, allowing them *bouche of court*, with livery of hay and oats, horse-shoes and nails. Sir Hugh Merrill had the same privilege for life, on condition of serving King Edward II.

BOUFLERS, LOUIS FRANCIS, DUKE OF, a peer and marshal of France, and a general of distinguished reputation, was the son of Francis count of Bouflers. He was born on the 10th January 1644, and having early entered into the army, was raised in 1669 to the rank of colonel of dragoons. In the conquest of Lorraine he served under Marshal Crevin. In the war against Holland he served under Turenne, frequently distinguishing himself by his skill and bravery; and when that celebrated captain was killed by a cannon-shot in 1675, he commanded the rear-guard during the retreat of the French army. After performing various military services in Germany, in Flanders, and on the frontiers of Spain, he gradually rose in rank as well as in reputation. In 1690 he was created general of the army of the Moselle, and contributed materially to the victory of Fleurus. In the following year he acted as lieutenant-general under the king in person; and whilst investing Mons, he was wounded in an attack on that place. He conducted the bombardment of Liege, although it was defended by an enemy superior in numbers, and afterwards forced the allied generals to abandon Luxembourg. He was intrusted with the command against King William at the siege of Namur; and for this and other important services he was raised, in 1693, to the rank of marshal of France. In 1694 he was appointed governor of French Flanders,

again-
file. and of the town of Lisle. By a skilful manœuvre he threw himself into Namur in 1695, and held out with unexampled obstinacy against the army of the allies under King William, sustaining four assaults, and only surrendering the place after four months of open trenches and the loss of 20,000 men to the besiegers. Having agreed to a capitulation, he was arrested as prisoner of war, because the French had not performed the stipulated terms on which the garrison had surrendered; and when he represented that the garrison should have been retained rather than himself, he was answered that he was estimated as worth more than 10,000 men. In the conferences which were held with the Earl of Portland, and terminated in the peace of Ryswick, he had a principal share. During the following war, when Lisle was again threatened with a siege by the Duke of Marlborough and Prince Eugene, Boufflers was appointed to the command, and made an obstinate resistance of four months. His magnanimity was not less remarkable than his military conduct; for when a partizan represented to him that it would not be difficult to kill Prince Eugene, he was told by the marshal, that he might expect a great reward for taking him prisoner, but the severest punishment if any thing were attempted against his life. He was rewarded and honoured by the king for his defence of Lisle, as if he had been victorious. It was indeed a species of triumph. His generous enemy, appreciating his merits, allowed him to dictate his own terms of capitulation: "je signerai," said Prince Eugene, "tout ce que vous voudrez;" and he was as good as his word. "Après quatre mois de tranchée ouverte," adds the prince in his *Mémoires*, "Boufflers m'envoya, le 8 décembre 1708, tous les articles qu'il voulait que je signasse; ce que je fis sans restriction." When the affairs of France were threatened with the most urgent danger, Boufflers, though a senior officer to Villars, made an offer to serve under that general, and was with him at the battle of Malplaquet. Here he again displayed his military skill by conducting the retreat, so that he lost neither cannon nor prisoners. He died at Fontainebleau in the year 1711, at the age of sixty-eight, and left the character of a true patriot, as well as of a great commander. Madame de Maintenon said of him, that "his heart was the last part that died."

BOUGAINVILLE, LOUIS ANTOINE DE, a celebrated circumnavigator, was born in Paris in 1729. His father was a notary and one of the sheriffs of the city of Paris. The parents of young Bougainville wished him to practise as a lawyer, and, for this purpose, he was received advocate in the parliament of Paris; but his own inclination was averse to the profession, and he entered into the army in the corps of musketeers.

He associated much with Clairaut and D'Alembert, who happened to live in his neighbourhood; and from this intercourse he derived his knowledge of algebra and fluxions. At the age of twenty-five he published his treatise on the *Integral Calculus*, intended as a supplement and continuation of L'Hôpital's treatise *Des infiniment petits*. Bougainville, in his preface, declares that all he has done in this work is to place in a systematic order the formulæ of different mathematicians.

He was raised to the rank of major in the Picardy regiment. He went to London as secretary to the French embassy, and was chosen a member of the Royal Society. In 1756 he went to Canada as captain of dragoons, and having distinguished himself in the war against England, was rewarded with the cross of the order of St Louis.

After the peace, the French government having conceived the project of planting a colony on the Falkland Islands, Bougainville undertook to begin this establishment at his own expense. The Falkland Islands, to which

Bougainville gave the name of Malouines (that is, St Malo Islands), are in 51° south latitude, and 10° of longitude to the east of the meridian of Cape Horn. Fish is abundant on their shores, and there is peat or turf for fuel, but no wood. Bougainville began the settlement by landing some families of French Canadians. The number of settlers was increased afterwards to 150.

This colony excited the jealousy of the Spanish government; and the government of France agreed that it should be given up to the Spaniards, the Spanish government undertaking to indemnify Bougainville for the expense he had been at in forming the establishment.

As a consolation to Bougainville for the loss of his colony he was appointed to command the frigate *La Boudese* of twenty-six eight pounders, and the transport *L'Etoile*, to go on a voyage of discovery round the world. He took with him Commerçon as naturalist, and Verron as astronomer.

This was the first voyage round the world performed by the French. Since the first circumnavigation by Magellan under the Spanish government in 1519, and that of Drake under Queen Elizabeth in 1577, eleven other circumnavigations of the world had been performed, part of them by the Dutch and part by the English, and also several voyages of discovery had been made in the Pacific Ocean without circumnavigation.

The expedition commanded by Bougainville was at Buenos Ayres at the time of the seizure of the Jesuits of Paraguay. The missions on the river Araguay, in the province of Paraguay, contained a population of 300,000 Indians, divided into parishes, and governed solely by the Jesuit parish priests. No other Europeans but the Jesuits were admitted into the country, in order that the work of conversion might not be frustrated by bad example. The produce of the labour of the Indians was delivered into the hands of the Jesuits, who furnished them with food and clothing. For this purpose the Jesuits had warehouses filled with European and American merchandise, and also a number of slaves. They had schools for instructing the Indians in music, painting, and other arts. The Spanish government having determined on the suppression of the Jesuits, took every precaution to prevent their being informed of the intended measure; and they were arrested and sent to Europe without any attempt at resistance on their part.

Bougainville passed the Straits of Magellan, and anchored for a week at Otaheite, where the English navigator Wallis had touched eight months before. A young man of Otaheite joined the expedition, and was taken to Paris, where he staid thirteen months. On his way back to his native country he died of the small-pox.

The numerous rocks and other dangers made Bougainville turn off to the north-east, and prevented him from continuing a westerly course, so as to pass through the channel which separates New Holland from New Guinea. These two islands, in his general chart, are laid down as forming one, although he possessed some information of the existence of the channel. Two years after, namely in 1770, Captain Cook sailed through this channel, so dangerous by its coral reefs.

The expedition having now crossed all the meridians of the Pacific Ocean, and suffering from the scurvy in consequence of scarcity of food, came to anchor in the Gulf of Cajeli, a settlement of the Dutch East India Company in the agreeable island of Borou, one of the Moluccas. The governor liberally supplied the wants of the expedition. He lived splendidly in a house built in the Chinese style, and judiciously adapted to the warmth of the climate; his wife and daughters wore the Chinese dress. "Sa maison étoit la notre," says Bougainville; "à toute heure on y

Bougainville.

Bougainville's Island.

trouvoit à boire et à manger, et ce genre de politesse en vaut bien un autre pour qui surtout se ressentoit encore de la famine." It was the beginning of September, and the expedition shortened their stay at Borou, in order to take advantage of the latter part of the easterly monsoon, which carried them to Batavia; from thence they proceeded to the Isle of France. Commerçon remained at the Isle of France that he might thence proceed to examine the botany of Madagascar, as did Verron for the purpose of observing the transit of Venus.

In 1769 the expedition arrived at St Malo, after a voyage of two years and four months, with the loss of only seven men out of upwards of 200.

Bougainville's account of the voyage is written with simplicity, and in a temper which inclined him to view objects on the humorous side. His courage, the good humour with which he maintained subordination, and his attention to the health and comforts of the crew, are everywhere conspicuous.

The art of making astronomical observations at sea was not so much improved as it is now, and the methods for ascertaining the longitude especially were very defective. In consequence of this, Bougainville's charts are erroneous, particularly in the longitudes. Neither did he remain long enough in any place to make particular surveys.

Bougainville's life was an active one, so that little of it could be devoted to study. On his return to France his time was passed in the company of the highest circles in Paris. He had the command of a ship under De Grasse and D'Estaing; and, in April 1781, when the French fleet was beaten, he rallied some of the beaten ships, and brought them into St Eustachio. After the peace, by which the independence of the United States of America was secured, Bougainville returned to Paris. The Academy of Sciences was at that time composed of pensioned members, and of associates who had no salary; Bougainville solicited and obtained the place of associate of the academy.

He had a project of making a voyage of discovery towards the north pole. As this did not meet with support from the French government, he sent his plan to Admiral Phipps; Phipps, however, followed a different course from that proposed by Bougainville, but he only got to the 80th degree of north latitude.

Recourse was had to Bougainville in order to repress the mutinous disposition of the sailors in the French navy before the breaking out of the Revolution; but his efforts were ineffectual. He had the rank of vice-admiral in 1791. In 1792 he escaped almost miraculously from the massacres of Paris, and went to live on his estate in Normandy. He was much attached to the government, which was then falling. He lived on his estate for some time; it was the only part of his fortune that the Revolution had left him. He was chosen a member of the Institute at its first formation, and, in consequence, returned to reside in Paris. He succeeded Borda as member of the Board of Longitude. In his old age, under the government of Bonaparte, he enjoyed the dignity of senator, and was created a count and member of the Legion of Honour.

He retained his good-humoured liveliness and his mental faculties to the last, and died in 1811, aged eighty-two. He was married, and had three sons who served in the French army. He was always eager to promote science; and he conducted himself during the Revolution in such a manner as to obtain the respect of all parties. His éloge is written by Delambre, in the *Memoirs of the Institute*. (B. B.)

BOUGAINVILLE'S Island, in the South Pacific Ocean, is high and mountainous, with extensive plains interposed, and is entirely covered with trees. It is inhabited, and is

separated from the island of Bouka on the north. Long. Bougainville 155. 20. E. Lat. 6. S.

BOUGEANT, WILLIAM HYACINTH, a famous Jesuit, born at Quimper 4th November 1690, first taught humanity at Caen and Nevers, and afterwards settled at the college of Louis the Great, where he employed himself in writing several works. The principal of these are, 1. A Collection of Physical Observations, extracted from the best authors; 2. A History of the Wars and Negotiations which preceded the treaty of Westphalia; 3. The Female Doctor, a philosophical amusement on the language of beasts; 4. The Marvellous Voyage of Prince Fanferdin in Romancia; 5. Exposition of the Christian Doctrine; and 6. Anacreon and Sappho, a dialogue in Greek verse. He died in 1743.

BOUGH, a term nearly synonymous with *Branch*. Anciently green boughs formed part of the decoration of altars and temples, especially on festive occasions. Boughs of oak were offered to Jupiter, of laurel to Apollo, of olive to Minerva, of myrtle to Venus, of ivy to Bacchus, of pine to Pan, and of cypress to Pluto.

BOUGIE. See SURGERY.

BOUGUER, PETER, an eminent French mathematician, was born in 1698. His father was king's professor of hydrography at Croisic in Lower Brittany, one of the best hydrographers of his time, and author of an excellent treatise on navigation. Young Bouguer was bred to mathematics from his infancy, and made rapid progress in that science. At an early age he was appointed to succeed his father in the chair of professor of hydrography, after having undergone a strict examination in mathematics, so as completely to satisfy his examiners. In 1727 he gained the prize given by the Academy of Sciences of Paris for his paper "On the best manner of forming and distributing the masts of ships." He got two other prizes from the academy in the course of four years: the one was bestowed on him for his dissertation "On the best method of observing the altitude of stars at sea;" the other for his paper "On the best method of observing the variation of the compass at sea." These papers are published in the *Prix de l'Académie des Sciences*. In 1729 he published a work entitled *Essai d'Optique sur la Gradation de la Lumière*, the object of which is to define the quantity of light which is lost by passing through a given extent of the atmosphere. He finds the light of the sun to be 300 times more intense than that of the moon.

He was soon after made professor of hydrography at Havre, whereby he had the advantage of being nearer Paris than before; and he was chosen associate geometer of the Academy of Sciences, an office which did not require residence in Paris. In this office he was the successor of Maupertuis. Afterwards he was promoted in the academy to the place of pensioned astronomer, and came to reside in Paris.

It was resolved in France to send an expedition to South America for the purpose of measuring a degree of the meridian near the equator. From that measurement, compared with the length of a degree of the meridian in other latitudes, the deviation from sphericity in the figure of the earth might be known. The academy made choice of four of its members to proceed on this voyage; they were Godin, Bouguer, and De la Condamine, for the geometrical operation, and the younger Jussieu for observations in natural history. Bouguer and his fellow-travellers sailed from La Rochelle in 1735, and it was ten years before he returned to France. The account of his operations during the expedition is given by him in the *Memoirs of the Academy of Sciences*, 1744, and in a separate work entitled *La Figure de la Terre déterminée par les Observations de MM. Bouguer et De la Condamine*. There is like-

wise an account of this expedition published by Don George Juan and Don Antonio de Ulloa, two scientific naval officers, who accompanied the expedition by order of the Spanish government. The length of a portion of the meridian was measured on the ground by means of a base and a set of triangles. Then, by observing the altitude of the ϵ of Orion which passed near the zenith simultaneously at the two ends of the meridian line that had been measured, that line was found to contain $3^{\circ} 7'$ of latitude. A star near the zenith was employed, to the end that the observation might not be affected by refraction; ϵ of Orion passed the meridian in the zenith near the middle of the line measured, so that the distance of that star south of the zenith of the northern extremity of the line was $1^{\circ} 25' 46''$; and its distance north of the zenith of the southern extremity of the line was $1^{\circ} 41' 13''$, the sum of these two numbers making $3^{\circ} 7'$. The altitude was taken by zenith sectors of a long radius. The ground on which these operations were performed was elevated 12,000 feet above the level of the sea, and 4200 feet above the neighbouring city of Quito, and situate in a plain extending from north to south, between the two ridges of the Cordillera. The northern extremity of the arc was on the equator. The length of the degree resulting was 56,767 toises; but this was the degree of a curve circumscribed round the earth at the height of 12,000 feet above the level of the sea; and the length of the degree at the level of the sea deduced from this, with some other corrections, is 56,753 toises. This length of the degree of the meridian at the equator was compared with the degree of the meridian measured in France, with the degree measured in Lapland, and with the degree of longitude deduced in the south of France. From this comparison it was concluded that the equatorial diameter of the earth is to the polar diameter as 179 to 178, and that the equatorial radius of the earth was about eight leagues longer than the polar. Since the time of Bouguer, degrees have been measured in different climates with more accurate instruments than he possessed; but the precise proportion of the equatorial and polar diameters of the earth is not yet finally ascertained. Bouguer makes the excess of the equatorial diameter above the polar to be $\frac{1}{179}$; Sir Isaac Newton made it $\frac{1}{180}$; Laplace, calculating from the lunar motion, $\frac{1}{181}$; Melanderhielm and Svanberg, from a degree measured anew in Lapland in 1783, compared with the degree measured in the province of Quito, $\frac{1}{183}$. Bouguer found the seconds pendulum $\frac{36}{100}$ of a line shorter at the summit of Pichincha than at the level of the sea; that is, the force of gravity was less by one 1200th part at that elevation.

He made some observations on the limit of perpetual snow, a subject which has been elucidated since his time by the researches of Humboldt, Von Buch, Wahlenberg, and others. At the equator the limit of perpetual snow is at 14,760 feet above the sea, a height equal to that of Mont Blanc. In Mexico, in the latitude of $19^{\circ} 20'$, it is at 13,800 feet, according to Humboldt. In latitude $28^{\circ} 15'$, where the Peak of Teneriffe is situate, it is supposed to be 11,700 feet: the Peak is only 11,454 feet, and has no perennial snow. On Etna, in latitude $37^{\circ} 30'$, the edge of the perennial snow is at the height of 9000 feet. On Mount Caucasus, in latitude $42^{\circ} 30'$, the limit is at 9900 feet; whilst on the Pyrenees, in latitude $42^{\circ} 45'$, it descends to 8400 above the sea; and on the Swiss Alps, in latitude 46° , to 8220 feet. In Iceland, in latitude 65° , the edge of the perennial snow is at the perpendicular height of 2892 feet from the sea. In Lapland, in latitude 67° , where the summers are warmer than in Iceland, though the winters are colder, the perennial snow does not descend so low, attaining only to 3300 French feet from the sea, as Von Buch and Wahlenberg ascertained by barometrical

observations. When the latitudes are the same, a solitary mountain will have the edge of the perennial snow higher than a mountain surrounded by others, on account of the warm winds from the neighbouring plains. A mountain in an inland situation will have the border of the perennial snow higher than a mountain in the same latitude, and situated in an island, the summers which reduce the limits of the snow being warmer in the inland situation. When the mass of perennial snow is large, glaciers are formed which descend below the limit of perennial snow. Chimborazo has 5400 feet of its height covered with perpetual snow, according to Humboldt. Bouguer thought he could perceive that the clouds do not ascend higher than 2400 feet above the summit of Chimborazo. If there were mountains whose height reached beyond the greatest height to which the clouds attain, all the part of the mountain above the region of the clouds would be free from snow, although exposed to intense cold. On Bouguer's supposition of the height to which the clouds ascend, the upper limit of snow at Chimborazo would be at the height of 22,200 feet above the sea; and the distance between the upper limit of snow and the lower limit would be there about 7800 feet.

Bouguer, whilst he was at the equator, made observations to ascertain the obliquity of the ecliptic, which he found to be $23^{\circ} 28' 28''$. He also made some experiments on the deviation of the plumb-line from the vertical, occasioned by the attraction of a neighbouring mountain, a phenomenon afterwards investigated by Dr Maskelyne on the mountain Schellien.

The number of Bouguer's papers contained in the printed Memoirs of the Academy of Sciences, is a proof of the assiduity with which he performed his duty in the academy. His *Helimeter* is described in the Memoirs of the Academy for 1748. It is an object-glass micrometer, and its essential parts consist of an astronomical dioptric telescope, with two object-glasses of the same focal length placed side by side. When this instrument is directed to the sun, each object-glass gives an image of that luminary; and the object-glasses are so placed that the limbs of the two images touch when the diameter of the sun is greatest, and when the diameter is less there is an interval between the limbs of the two images.

Some experimenters maintained that the plumb-line had a diurnal oscillation; Bouguer showed that it remains at rest. He employed for this purpose a telescope, attached to the end of a chain 187 feet long, suspended within the dome of the church of the Hospital of Invalids at Paris: the telescope was directed to a distant mark, so that any motion in this long pendulous system might be seen by the deviation of the wires of the telescope from the mark. The particulars of this experiment are to be found in the *Mém. de l'Académie des Sciences*, 1754.

In the volume for 1739 and 1749 there are papers of his on the astronomical refraction in the torrid zone, particularly in cases where the star is seen at more than 90° from the zenith, in consequence of the observer being in a high situation. In the volume for 1747, he proposed a log of a new construction for measuring a ship's way.

In the same collection there are papers of his on the length of the pendulum, on the form of the prow which suffers least resistance in passing through the water, and on a variety of other subjects. He bestowed great pains on his works, and his health at length became impaired by a sedentary life, and too constant application to scientific pursuits. He died in 1758, aged sixty. His disposition was naturally mild, and the dissensions that arose between him and his fellow-traveller De la Condamine caused him great vexation. He was impressed, from his earliest years, with a conviction of the truths of Christi-

Bouhours. anity. By economy he had acquired a moderate fortune, a part of which he bequeathed to the poor.

The following is a list of his principal works: *Traité d'Optique sur la Gradation de la Lumière*, 1729 and 1760. *Entretiens sur la Cause de l'Inclinaison des Orbites des Planètes*, 1734; another edition in 1749. *Traité de Navire, de sa construction, et de ses mouvemens*, 1746, 4to. *La Figure de la Terre déterminée, par les Observations de Mess. Bouguer et de la Condamine, envoyés par ordre du Roy au Pérou*; par M. Bouguer, 1749, 4to. *Nouveau Traité de Navigation, contenant la Théorie et la Pratique du Pilotage*, 1753. A new edition by De la Caille, 1761. *Solution des Principaux Problèmes sur la Manœuvre des Vaisseaux*, 1757. *Opérations faites pour la Verification du Degré du Méridien entre Paris et Amiens*; par Mess. Bouguer, Camus, Cassini, et Pingré, 1757.

After his return from South America he was editor of the *Journal des Savans*. Some of his papers in the *Memoirs of the Academy of Sciences* have been mentioned in this article; his *Eloge* is contained in the volume for 1758. (B. B.)

BOUHOURS, DOMINIC, a celebrated French critic, was born at Paris in 1628. He entered into the society of Jesuits at the age of sixteen, and was appointed to read lectures upon polite literature in the college of Clermont at Paris, where he had studied; but he was so incessantly attacked with headachs, that he found himself unable to execute the task assigned him. He afterwards undertook the education of two sons of the Duke of Longueville, which he conducted with great applause. The duke had such a regard for Bouhours that he died in his arms; and the "account of the pious and Christian death" of this great personage was the first work which Bouhours gave the public. He was sent to Dunkerque to the Popish refugees from England; and, in the midst of his missionary occupations, found means to compose and publish books. Among these were *Entretiens d'Ariste et d'Eugène*, a work of a critical nature on the French language. His book was printed no less than five times at Paris, twice at Grenoble, and afterwards at Lyons, at Brussels, at Amsterdam, at Leyden, and other places; and it embroiled him in quarrels with a great number of persons, particularly Menage, who, however, lived in friendship with the author before and after. The fame of this piece, and the pleasure he took in reading it, recommended Bouhours so effectually to the celebrated minister Colbert, that he intrusted him with the education of his son the Marquis of Segnelay. He afterwards wrote several other works, the chief of which are, 1. Remarks and Doubts upon the French Language, 1694; 2. Dialogues upon the art of Thinking Well in works of Genius, 1687; 3. The Life of St Ignatius, 1679; 4. The Art of Pleasing in Conversation; 5. The Life of St Francis Xavier, apostle of the Indies and of Japan, 1682. This last work was translated from the French into English by Mr Dryden, and published at London in the year 1668, with a dedication to James II.'s queen prefixed. Bouhours's works may be divided into two classes, namely, those of a religious, and those of a purely literary character; and the number of the one is nearly equal to that of the other. It was his practice indeed to publish alternately a book on literature and a work on some subject of piety; which gave occasion to a wag, in a satirical epitaph, to remark of him "qu'il servait le monde et le ciel par semestre." His *Pensées ingénieuses des Anciens et des Modernes*, though at once instructive and amusing, exposed him to censure as well as ridicule, on account of some strange misjudgments and omissions. Either from spite or misconception, he has classed Boileau with the least esteemed of the Italian satirical versifiers, thus placing him in the worst company he could possibly find; and what

is still more extraordinary, he has ingeniously omitted, in his Thoughts on the Moderns, all mention of the illustrious name of Pascal. This gave occasion to a variety of epigrams at the expense of the worthy father, particularly to the following by Madame Deshoulières:

Père Bouhours, dans vos *Pensées*,
La plupart fort embarrassées,
A moi vous n'avez point pensé.
Des célèbres auteurs que votre livre chante,
Dans une liste triomphante
Je ne vois point mon nom placé;
Mais aussi dans le même rôle
Vous avez oublié Pascal,
Qui pourtant ne pensait mal:
Un tel compagnon me console.

BOUKA, or LORD ANSON'S ISLAND, in the South Pacific Ocean, lying south of Bougainville's Island, is covered with wood from the shore to the centre, which is of considerable height. Along the beach are extensive plantations of cocoa-nut trees. Their canoes are ingeniously constructed; and they are remarkably dexterous in the use of the bow and arrow, bringing down birds on the wing with almost unerring certainty. Long. of the north cape, 153. 34. E. Lat. 5. 0. S.

BOULAINVILLIERS, HENRY DE, Lord of Saint Saire, and an eminent French writer, was descended from a very ancient and noble French family, and born at Saint Saire in 1658. He received his education among the fathers of the oratory, at the college of Juilli, where he discovered from his infancy the uncommon abilities for which he was afterwards distinguished. He applied himself principally to the study of history; and his performances in this department are numerous and considerable, but deformed by an extravagant admiration of the feudal system, which he regarded as the *chef d'œuvre* of the human mind. To this idea he incessantly recurs in all his writings, and misses no opportunity of regretting those good old times, in which the people, enslaved by petty tyrants alike ignorant and barbarous, had neither industry, nor commerce, nor property, and in which a hundred seignurs, the oppressors of the country and the enemies of the king, composed what he is pleased to consider the most perfect of all governments. He was the author of a History of the Arabians; Fourteen Letters upon the ancient Parliaments of France; a History of France to the reign of Charles VIII.; and the State of France, with historical memoirs concerning the ancient government of that monarchy, to the time of Hugh Capet, "written," says M. Montesquieu, "with a simplicity and honest freedom worthy of that ancient family from which their author was descended." M. Boulainvilliers died at Paris in 1722, and after his death was published his Life of Mahommed.

BOULANGER, NICHOLAS ANTHONY, a very singular Frenchman, was born at Paris in 1722, and died there in 1759, aged only thirty-seven. During his education he is said to have come out of the college of Beauvais almost as ignorant as he entered it; but struggling hard against his unaptness to learn, he at length overcame it. At seventeen he began to study mathematics and architecture; and in three or four years made such progress, as to be useful to the Baron of Thiers, whom he accompanied to the army in the capacity of engineer. Subsequently he had the superintendence of the highways and bridges; and he executed several public works in Champagne, Burgundy, and Lorraine. The author of his life, in the *Dictionnaire des Hommes célèbres*, writes, that in this province a terrible spirit discovered itself in him, which he himself did not discover before; and this was, it seems, the spirit of "thinking philosophically." In cutting through mountains, in directing and changing the courses of rivers, and in breaking up and turning over the strata of the earth, he

Boulanger saw a multitude of different substances, which, he thought, evinced the great antiquity of it, and a long series of revolutions which it must have undergone. From the revolutions in the globe, he passed to the changes that must have happened in the manners of men, in societies, in governments, in religion; and he formed many conjectures upon all these. To be further satisfied, he wanted to know what, in the history of ages, had been said upon these particulars; and, that he might derive information from the fountain head, he learned first Latin, then Greek, and afterwards Hebrew, Syriac, Chaldaic, and Arabic; and, by dint of unwearied perseverance, acquired such a stock of erudition, that, if he had lived, he would have been one of the most learned men in Europe. But, as we have observed, death stepped in and cut him off in the full vigour of life, while ardently pursuing his studies. His principal works are, 1. *Traité du Despotisme Oriental*, 2 vols. 12mo, 1761. 2. *L'Antiquité dévoilée*, 3 vols. 12mo, 1761; posthumous. 3. He furnished to the *Encyclopédie* the articles *Déluge*, *Corvée*, *Guèbres*, *Langue Hébraïque*, and *Economie Politique*. 4. He left behind him, in manuscript, a Dictionary, which may be regarded as a concordance of ancient and modern languages. As a man, he is said to have been of a sweet, calm, and engaging temper; which, however, it is very difficult to reconcile with the dark, impetuous, ardent spirit, which appears to have animated him as a writer. During the latter period of his life he was connected with a set of writers, illustrious in point of talent, but utterly devoid of all principle, who openly professed themselves the enemies of religion, and were heated with the idea of effecting its destruction. In the society of these men, whose opinions he participated, Boulanger contributed his share to the common enterprise, by the arguments which he drew from his studies and the hypotheses he had conceived; but several of the irreligious writings which have been ascribed to him are nevertheless not of his composition, and his memory ought therefore to be exonerated from the opprobrium which has in consequence been cast upon it. He was a speculative infidel, not a common blasphemer, and ought not to be held answerable for the abominations which weaker and worse men have published in his name.

BOULANGER, *John*, an engraver, was a native of France, and born at Amiens in 1607. His first manner of engraving appears to have been copied, in some degree, from that of Francis de Poilly; but soon after he adopted one of his own, which, though not original, he nevertheless greatly improved. He finished the faces, hands, and all the naked parts of his figures, very neatly, with dots instead of strokes, or strokes and dots; and the effect, though singular enough, is by no means displeasing. In some few instances, however, the coarse graving of his draperies and back ground presents so violent a contrast to the neater work of the flesh, that the outline of the latter is rendered hard, and the general appearance of it flat and chalky. He did not draw the naked parts of his figures correctly, or in good taste; whilst his draperies are heavy, and the folds not well marked. However, his best prints possess merit, and are deservedly held in considerable esteem.

BOULAY, CÉSAR EGASSE DU, in Latin *Bulæus*, was born at St Ellier, on the Lower Maine, in the beginning of the seventeenth century, and became professor of humanity at the college of Navarre, as well as register, rector, and historiographer of the university of Paris. He died in 1678, after having published several works. The principal of these are, a History of the University of Paris, in Latin, 6 vols. folio, 1665 and 1673; and the *The-saurus of Roman Antiquities*, in one volume folio.

BOULDER-WALL, a kind of wall built of round flints

or pebbles, laid in strong mortar, and used where the sea has a beach cast up, or where there are plenty of flints.

BOULETTE, in the manège. A horse is called *boulette* when the fetlock, or pastern joint, bends forward, and out of its natural situation, whether through violent riding, or by reason of the animal being too short jointed, in which case the least fatigue will bring it down.

BOULOGNE, an arrondissement of the department of the Pas de Calais, in France, extending over 348 square miles, comprehending six cantons and 100 communes, and containing 76,220 inhabitants. The chief city, of the same name, on the sea shore, is divided into the lower and the upper town, together having six churches, a hospital, 1600 houses, and 16,650 inhabitants. In the summer it is resorted to for sea-bathing both by English and French visitors. It is a place of some trade, but its harbour is only capable of admitting vessels at high tides. Long. 1. 30. 43. E. Lat. 50. 43. 33. N.

BOULTER, DR HUGH, was born in or near London, of reputable and wealthy parents. He was educated at Merchant-Tailor's School before the Revolution, and was from thence admitted a commoner of Christ-church in Oxford. Some time afterwards he was chosen a demy of Magdalen College, at the same election with Mr Addison and Dr Wilcox. From the merit and learning of the persons elected, this was commonly called by Dr Hough, president of the college, the "golden election." He afterwards became fellow of the same college; in which station he continued till the year 1700, when he was invited to London by Sir Charles Hodges, principal secretary of state, who made him his chaplain, and recommended him to Dr Tennison, archbishop of Canterbury; but for his first preferments he was indebted to the Earl of Sunderland, by whose interest and influence he was promoted to the parsonage of St Olave in Southwark, and the archdeaconry of Surrey. Here he continued discharging very faithfully and diligently every part of his pastoral office, till he was recommended to attend George I. as his chaplain when he went to Hanover in 1719. He had the honour to teach Prince Frederick the English language; and by his conduct he so won the king's favour, that he promoted him to the deanery of Christ-church and the bishopric of Bristol in the same year. As he was visiting his diocese five years afterwards, he received a letter from the secretary of state, acquainting him that his majesty had nominated him to the archbishopric of Armagh and primacy of Ireland. This honour he would gladly have declined, and desired the secretary to use his good offices with his majesty to excuse him from accepting it. At this juncture Ireland happened to be in a great flame, occasioned by Wood's project; and the ministry thought that the bishop would greatly contribute to quench it by his judgment, moderation, and address. The king therefore laid his absolute commands upon him, and he submitted, but with some reluctance. As soon as he had taken possession of the primacy, he began to consider the country in which his lot was cast for life as his own, and to promote its true interest with the greatest zeal and assiduity. Accordingly, he exerted himself in performing the noblest acts of beneficence and public spirit. In seasons of the greatest scarcity he was more than once instrumental in preventing a famine which threatened that nation. On one of these occasions he distributed vast quantities of corn throughout the kingdom, for which the House of Commons passed a vote of public thanks; and at another time two thousand five hundred persons were fed at the poor-house in Dublin, every morning, and as many every evening, for a considerable time together, mostly at the primate's expense. When schemes were proposed for the

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advantage of the country, he encouraged and promoted them not only with his counsel, but his purse. He had great compassion for the poor clergy of his diocese, who were disabled from giving their children a proper education; and he maintained several of these children in the university. He erected four houses at Drogheda for the reception of clergymen's widows, and purchased an estate for the endowment of them. His charities for augmenting small livings and buying glebes amounted to upwards of L.30,000, besides what he devised by will for the like purposes in England. In short, the instances he gave of his generosity and benevolence of heart, his virtue, piety, and wisdom, are almost innumerable, and the history of his life is his noblest panegyric. This excellent prelate died at London, on the 2d June 1742, and was interred in Westminster-abbey, where a beautiful monument of finely-polished marble was erected to his memory.

BOULTINE, a term which workmen use for a moulding, the convexity of which is just one-fourth of a circle; being the member just below the plinth in the Tuscan and Doric capitals.

BOULTON, MATTHEW, a manufacturer and practical engineer of great celebrity, son of Matthew Boulton, by his wife Christian, daughter of Mr Peers of Chester, was born at Birmingham on the 14th of September 1728, and died in August 1809.

He was educated at a neighbouring grammar-school, kept by Mr Ansted of Deritend, and was called early into active life upon the death of his father in 1745. The various processes by which the powers of the human mind have given facility to the artist in rendering the different forms of matter obedient to his command, afforded ample scope for the exercise of his inventive faculties, in improving the manufactures of his native place. His first attempt was a new mode of inlaying steel; and he succeeded in obtaining a considerable demand for the products of his manufactory, which were principally exported to the Continent, and not uncommonly re-imported for domestic use, as of foreign manufacture.

In 1762, his fortune being already considerable, he purchased a tract of barren heath in the neighbourhood of Birmingham, with a single house on it, and there founded, at the expense of L.9000, the manufactory which has been so flourishing, and so well known under the name of Soho. His workmen were at first principally employed in the imitation of or moulu, and in copying oil paintings with great accuracy, by means of a mechanical process which was invented by a Mr Egginton, who afterwards distinguished himself by various works in stained glass. Mr Boulton finding the force of horses inadequate to the various purposes of his machinery, erected in 1767 a steam-engine, upon the original construction of Savery, which, notwithstanding the inconvenience of a great loss of steam from condensation, by its immediate contact with the water raised, has still some advantages from the simplicity of the apparatus which it requires, and has even lately been found to succeed well upon a small scale. But Mr Boulton's objects required a still more powerful machine, and he had the discernment to perceive that they might be very completely attained by the adoption of the various improvements lately made in the steam-engine by Mr Watt of Glasgow, who had obtained a patent for them in 1769, the privileges of which were extended in 1775, by an act of Parliament, to a term of 25 years. Mr Boulton induced this ingenious and scientific inventor to remove to Birmingham. They commenced a partnership in business, and established a manufactory of steam-engines, in which accurate execution kept pace so well with judicious design, that its productions continued

to be equally in request with the public after the expiration of the term of that legal privilege which at first gave the proprietors the exclusive right of supplying them, and which had been confirmed in 1792 by a decision of the Court of King's Bench against some encroachments on the right of the patentee. It was principally for the purpose of carrying on this manufactory with greater convenience, that the proprietors established an iron-foundry of their own at Smethwick, in the neighbourhood of Soho.

In 1785 Mr Boulton was made a fellow of the Royal Society, about the same time with Withering, and several others of his scientific neighbours. In 1788 he turned his attention to the subject of coining, and erected machinery for the purpose, so extensive and so complete, that the operation was performed with equal economy and precision, and the coins could not be imitated by any single artist for their nominal value; each of the stamps coining, with the attendance of a little boy only, about eighty pieces in a minute. The preparatory operation of laminating and cutting out the metal is performed in an adjoining room; and all personal communication between the workmen employed is rendered unnecessary, by the mechanical conveyance of the work from one part of the machinery to another. A coinage of silver was executed at this mint for the Sierra Leone Company, and another of copper for the East Indies, besides the pence and half-pence at present in circulation throughout England, and a large quantity of money of all kinds for Russia. In acknowledgment of Mr Boulton's services, and in return for some specimens of his different manufactures, the Emperor Paul made him a present of a valuable collection of medals and of minerals.

Mr Boulton obtained, in 1797, a patent for a mode of raising water by impulse, the specification of which is published in the ninth volume of the *Repertory of Arts*, p. 145. It had been demonstrated by Daniel Bernoulli, in the beginning of the last century, that water flowing through a pipe, and arriving at a part in which the pipe is suddenly contracted, would have its velocity at first very greatly increased; but no practical application of the principle appears to have been attempted, until an apparatus was set up in 1792 by Mr Whitehurst, for Mr Egerton of Oulton, in Cheshire, consisting of an air-vessel, communicating with a water-pipe by a valve, which was forced open by the pressure or rather impulse of the water, when its passage through the pipe was suddenly stopped by turning the cock in the ordinary course of domestic economy; and although the pipe through which the water was forced up was of moderate height, the air-vessel, which was at first made of lead, was soon burst by the "momentous force," as Mr Whitehurst very properly terms it. The apparatus had excited much attention in France, under the name of Montgolfier's hydraulic ram; and Mr Boulton added to it a number of ingenious modifications, some of which, however, are more calculated to display the vivid imagination of a projector, than the sound judgment of a practical engineer, which had in general so strongly characterized all his productions.

He died, after a long illness, in possession of considerable affluence and of universal esteem, leaving a son and a daughter to profit by the wealth and respectability which he had acquired. He was buried on the 24th of August, at Handsworth, near Soho, attended by a procession of 600 workmen, and by a numerous train of his friends and acquaintance. (*Monthly Magazine*, October 1809, p. 368.) (L. L.)

BOUNTY, in *Commerce*, a premium paid by government to the exporters of certain commodities. See *POLITICAL ECONOMY*.

BOURBON, an island in the Indian Sea, about 400 miles to the east of Madagascar. It was discovered by the Portuguese in 1545, as appears by a date inscribed by them upon a pillar when they first landed. They gave it the name of Mascarenhas, but do not appear to have formed any establishment; so that when the French settled in Madagascar, this island was totally desolate. In 1642, De Pronis, agent for the French East India Company, took possession of the island, but used it merely as a place of banishment for offenders. The exiles, however, gave so favourable a report, that, in 1649, De Harcourt, then governor of Madagascar, formed an extensive settlement, to which, from the royal family of France, he gave the name of Bourbon. The colonists, however, finding their situation uncomfortable, and receiving no support from Madagascar, embraced the offer of an English captain, and in the year 1658 embarked for Madras. When the last great blow was given to the French at Madagascar by the natives, who surprised and cut them off in one night, there escaped as many men as, with their wives, who were natives, filled two canoes; and these being driven by the wind on the isle of Bourbon, formed a fresh colony, who, for want of an opportunity to remove, were constrained to remain in and to cultivate it. It was not long before a further supply of inhabitants arrived. A pirate who had been committing depredations in the Indian seas, returning to Europe, ran ashore and had his vessel dashed to pieces on the rocks, so that the crew were forced to join the former inhabitants; and as they had on board their vessel a great many Indian women whom they had made prisoners, they lived with them, and in process of time had a numerous posterity. As East India ships touched frequently here when too late to double the Cape, many of the sailors deserted and became planters in the isle of Bourbon. When the place grew more populous, the people naturally became more civilized, and desirous of living in a more commodious manner; which induced them to build small vessels, and make trips to Madagascar in order to purchase slaves, whom they employed in their plantations to cultivate aloes, tobacco, and other products, with which they carried on a small trade when ships of any nation anchored in their roads for refreshments. In this situation the French East India Company put in their claim; and assuming the property of the island, sent thither five or six families and a governor. At first the inhabitants expected to reap some benefit from their new masters; but finding very little, and considering the governor as tyrannical, they revolted at the instigation of a priest, and seized and put him into a dungeon, where he died. Some of the ringleaders were punished, a kind of fort was erected, and a few guns placed on it; but in other respects, within the last forty years, the island was in no state of defence. The number of inhabitants in the year 1717 was computed at 2000, viz. 900 free and 1100 slaves. When the present French India Company became, by their charter, possessed of the island of Bourbon, they began very diligently to improve it; raising new forts and batteries, so as to render it in a manner inaccessible, and importing the coffee-tree from Arabia, which has succeeded so well, that it has become an extensive object of culture, and is considered as only second to that of Yemen. The clove-tree was also introduced with success. In 1811 Bourbon was captured by a British force, but restored at the general peace.

The physical structure of this island presents many striking features. It does not, like the Isle of France, consist of a level plain, from which conical hills arise in detached masses. The whole island is as it were one mountain, having its most elevated points in the centre, and thence sloping gradually down to the sea. This great

mass, however, is split into two portions, of which the loftiest, situate in the northern part, is called the *Gros Morne*, and its summit the *Piton des Neiges* or Snowy Peak. There is here no present action of volcanic fire; but the frequent occurrence of deep valleys or basins, rapid rivers bordered by perpendicular walls of rock, hillocks precipitated into these valleys and torrents, basaltic prisms often disposed in regular colonnades, strata thrown into the most irregular positions,—all these, in M. Bory de St Vincent's opinion, indicate terrible physical revolutions in former times. The northern mountain is entirely volcanic, and the phenomena present themselves in an extraordinary state of frequency and activity. This writer not only conceives both these mountains to have been originally volcanic, but the whole island to have been thrown up by the action of subterranean fire. They appear to him also to have formerly composed only one, having an intermediate summit higher than that of either now is. The volcanic agitations, however, having hollowed the internal part of this great mass, the exterior crust fell in, and reduced the island to the shattered state which it now exhibits. To a great extent indeed it is divided into two portions by an immense hollow, bordered with perpendicular walls of rock, which, after running parallel for seven or eight miles, form an arch and unite. At the foot of the volcano is found an immense track of what the inhabitants call *Brulé*, or burnt country, supposed to have been formed by the lava spreading into a species of fiery lake, and then consolidating into the present surface. It is destitute of all vegetation whatever; and its colour is of the gloomiest black, the surface being broken by holes, crevices, and innumerable asperities of every description. These, joined to its hard and brittle consistence, render it impossible to tread on it without the severest injury to the feet. Those of our traveller's attendant negroes were severely lacerated; and his own, though defended by strong shoes, were wounded in several places.

The streams of Bourbon are mere mountain torrents, which descend from steep to steep, and throw themselves into the sea. In their fall they dig deep ravines, bordered by lofty and almost perpendicular walls. The largest river, however, that of St Denis, has only a course of seven or eight miles. These deep and foaming torrents, the rude surface of the ground, and the perpendicular rents by which it is everywhere broken, render travelling through Bourbon a most arduous undertaking. M. Bory de St Vincent was assured that his plan of reaching the two principal peaks was altogether impracticable; but his enterprise and love of science enabled him to surmount all the intervening difficulties.

In the ascent to the summit of the volcanic mountain, the obstacles encountered were truly formidable. Sometimes the sides of nearly perpendicular rocks were to be climbed; at other times a road was to be made by cutting down the bushes and filling up the crevices; whilst a mist, which rises every day from the sea, rendered it impossible to distinguish his companions at the smallest distance. At length they reached the summit of the *Mamelon central*. The crater here, to which the name of Dolomieu was given, consists of a cavity forty fathoms in diameter, and about eighty feet deep, the bottom filled with confused piles of greyish coloured lava. The sides showed none of that soft lava which forms a species of varnish over the interior of other craters; they consisted of irregular fragments of hard and compact substances. Our author here notices the error of those who expect, when they reach the summit of a crater, to look down into an unfathomable abyss. The fact is, that from whatever depth the liquified substances may have ascended, as soon as the conflagration ceases, they harden and fill up the

Bourbon. opening, so that only a very small void remains. Being led, however, by a sulphureous smell, to the left side of the present crater, they discovered a deep hollow like a tunnel, the walls of which were composed of burning lava; while beneath, two columns of fiery matter, rising to the height of 120 feet, threw up a bloody light, which shone brightly, even amid the blaze of a tropical noon. This spectacle, accompanied with a sound similar to that of a mighty cascade, filled their minds with terror and admiration.

Our traveller, in ascending, had supposed the *Mamelon central* to be the highest peak of the volcanic mountain; but he now discovered, at the distance of about 200 fathoms, a still more elevated point, which, after himself, he named *Bory*. It is a vast elliptic basin, the largest diameter of which is 120, and the smallest 100 fathoms. The sides rise perpendicularly like walls, and are 200 feet high at their greatest elevation. There were some broken parts, however, by which the travellers could descend into the abyss. They found it tolerably level; but the volcanic ashes with which it was bestrewn hid the scoriæ and other substances which filled it. In the centre was a crevice, the depth of which they could not discover. This crater was entirely silent.

The travellers spent the night on the crater *Dolomicu*; but the tremendous sounds, the blaze of light, and the singularity of their situation, scarcely allowed them to close their eyes. At about 1200 feet beneath, they perceived a stream of lava issuing from the mountain, the outlet, probably, of those liquified substances which they saw fermenting at the bottom of the crater.

The crater is said to have been formed during a violent eruption of the volcano in 1791. In the beginning of June a burning vapour appeared rising from the summit, then the side of the mountain opened, and a vast torrent of lava rushed into the sea. On the 17th of July a subterranean noise, like the discharge of cannon, was heard throughout the island; after which there rose from the top of the mountain an enormous column of smoke, of a deep black, with white spots interspersed. The inhabitants, who had never before witnessed such a phenomenon, were struck with consternation. Soon, however, the column fell down, and formed a species of arch over the volcano. The falling in of the interior, undermined by the previous discharge, is supposed to have been the cause of the tremendous sound, and of the ultimate opening of the crater.

This is, perhaps, the most active volcano in nature. Since the Christian era, Etna has made only twenty-seven eruptions, and Vesuvius twenty-four. But a resident at Bourbon assured our author, that, from 1785 to 1802, the mountain had vomited flames at least twice every year, and eight of the streams had entered the sea. The lava, however, scarcely ever issues from the summit of a crater, but generally from openings far down the mountain, and sometimes almost on a level with the sea. It is remarkable, also, that earthquakes, which so generally desolate volcanic countries, are here unknown, or, at least, so slight, as to occasion no serious inconvenience. The constant escape of the subterraneous fire through the channel of the volcano may probably be the chief cause which prevents it from shaking the surrounding regions. Another usual accompaniment, that of warm springs, is also wanting; and none of the waters are impregnated with any species of gas. No petroleum has been found, nor any metal, except iron.

Our traveller next made an excursion to the *Piton des Neiges*, which forms the summit of the *Gros Morne*, the highest mountain in the island. This undertaking proved still more arduous. The season was favourable; yet, when they had mounted about half-way, a prodigious rain

came on; and the road lay through wet and swampy grounds, which were soon entirely covered with water. The mists became so thick, that nothing could be distinguished. The negroes, accustomed to a milder air, were benumbed; and, refusing to proceed, would have perished with cold, had not the Frenchmen driven them forcibly on, till they came to a spot where they found shelter and refreshment. They spent here two nights, and on the third day were able to reach their destination. The view from the summit appeared to our traveller to equal the most majestic scenes of the Alps and the Pyrenees. In the island beneath, every object was visible as on a map; while, on every side, the immeasurable extent of ocean mingling with the skies, made them feel as if insulated on this spot from the rest of the universe. The thermometer was so low as 8°. Here considerable masses of rock were observed, undermined to such a degree that a very slight effort was sufficient to throw them down the precipices, where, displacing others, they rolled to a great depth, and caused prodigious havoc. Every part of the mountain, indeed, appears furrowed and shattered by the violent action of the rains, which have already sensibly diminished its magnitude, and are likely to do so more and more.

M. Bory does not appear to have instituted any investigation into the height of these mountains. Professor Jameson, in his *Geognosy*, estimates that of the *Gros Morne* at 9600, and that of the volcano at 7680 feet above the level of the sea. The French traveller gives a copious, but not very precise account of its geological features. The lower part of the *Gros Morne* is composed of basalt, a substance which abounds in every part of the island, and which, from the manner in which it is connected with and surrounded by lava, is conceived by our author to have been universally crystallized from a state of fusion. He notices, also, the frequent occurrence of what he calls *trappean lava*; though this, as well as much of the basalt, would probably, by the disciple of Werner, be referred to some of the newer formations of trap. On some of the precipices at the summit of the *Gros Morne*, there appeared an immense depth of horizontal strata, which might have rendered an igneous origin improbable, had it not been so clearly proved by other phenomena. Large blocks of granite are found in the rivers which flow at the foot of the *Gros Morne*.

It is now time to take a view of the political and commercial aspect of Bourbon. By the revolutionists it was called Reunion; but this name, which was never fully established, may be now supposed to have again given place to its ancient appellation. The island is divided into eleven parishes, St Denis, containing the capital of that name, St Marie, St Susanne, St André, St Benoit, St Rose, St Joseph, St Pierre de la Rivière d'Abord, St Louis du Gaul, St Leu, and St Paul. St Denis can scarcely be called a city; the streets resemble roads in the country, being covered with grass and sand, under which are often concealed sharp pointed stones, which inflict severe wounds on the feet. The houses are built of wood, and are agreeable; they are constructed entirely with a view to coolness. The furniture is slender, and many of the rooms are not even carpeted; a deficiency not arising from absolute poverty, but from the difficulty, in this remote situation, of procuring the artificial conveniences of life. The houses in the country are of a peculiar construction, very long, very narrow, and tapering to a point.

The island is distinguished into the windward and leeward quarters; of which the former, descending by a gentle slope, and refreshed by continual breezes, is fertile and smiling; while the latter is comparatively rude, dry, and barren. The torrents, continually washing away the

soil, are supposed to augment the sterility. Only a narrow slope, about a league and a half inward from the sea, is under regular cultivation. The interior consists of immense forests, inhabited by a species of fugitive mulattoes, who live almost in a state of nature. The population in 1763 was estimated by Bory de St Vincent at 4000 whites and 15,000 slaves. If these numbers are at all accurate, the increase must have been very great. The enumeration of 1827 gave 18,747 whites, 6387 free people of colour, 41,340 males, and 22,107 female slaves; in all 88,581.

The staple production of this island is coffee. The first plants were early brought from Arabia, and soon flourished to such a degree, that the coffee of Bourbon was only second to that produced in the parent district. During the revolution, the want of a regular market, by diminishing the encouragement to careful cultivation, sensibly lowered the quality. It is still, however, produced in large quantity. Next to it ranks the article of cloves. The clove-tree is of very easy cultivation; the chief disadvantage is the precariousness of the produce. It has been known in one year to yield only 1000 lbs., and in the next 500,000 lbs. Cotton, likewise, has been long a staple of the island; but a violent hurricane in 1801, and a disease which afterwards made its appearance among the plants, discouraged a number of the planters, who accordingly began to employ their lands in the culture of coffee. During the last ten or twelve years the culture of coffee, cotton, and cloves, has diminished, partly from local causes, and partly from the low price which they bear in Europe. On the other hand, that of sugar has very remarkably increased. In 1820 the produce was only from four to five millions of kilogrammes; in 1828 it had risen to thirteen, and in 1829 to twenty-nine millions. In 1827 the quantity of land employed in the production of sugar was stated at 8241 hectares, coffee 8909, spices 4993, grains 28,840. Bourbon labours under the serious disadvantage of not possessing a single harbour, nor any roadstead in which vessels can ride with safety. The trade, therefore, can be conducted only through the medium of Mauritius, and is entirely in the hands of the merchants of that island. (E.)

BOURBON, *Nicholas*, a Latin poet of the sixteenth century, was a native of Vandœuvre, near Bar-sur-Aube, and the son of a blacksmith. He was so learned in the belles-lettres, and particularly in Greek, that Margaret de Valois appointed him preceptor to her daughter Jane d'Albret of Navarre, the mother of King Henry IV. After a residence of several years at court he retired to Candé, where he had a benefice, and died about the year 1550. He wrote eight books of *Nugæ*; a poem on the forge, which he has entitled *Ferraria*; *Pædologia, sive de Puerorum moribus Libellus*; *Tabellæ Elementariæ*; and a Dialogue on the death of Francis of Valois and the accession of Henry. Erasmus praises his *Nugæ*.

BOURBON, *Nicholas*, a celebrated Greek and Latin poet, was nephew to the preceding. He taught rhetoric in several colleges of Paris; and the Cardinal de Perron caused him to be nominated professor of eloquence in the Royal College. He was also canon of Langres, and one of the forty of the French academy. At length he retired to the fathers of the oratory, where he died in 1644, aged seventy. He is esteemed as one of the greatest Latin poets France has produced. His poems were printed at Paris in 1630.

BOURBON-VEKDÉE, an arrondissement in the department of Vendée, in France, extending over 630 square miles, and comprehending eight cantons and seventy-three communes, with 65,171 inhabitants. The chief place, now of the same name, formerly La Roche-sur-Yon, and

then Ville Napoleon, has been built since the civil war which devastated the department to which it belongs.

BOURCHIER, JOHN, Lord Bernars, grandson and heir of a lord of the same name, who was descended from Thomas of Woodstock, Duke of Gloucester, and had been knight of the Garter and constable of Windsor-castle. Under Edward IV. this Lord John was created a knight of the Bath on the marriage of the Duke of York, second son of Edward IV., and was first known by quelling an insurrection in Cornwall and Devonshire, raised by Michael Joseph, a blacksmith, in 1495, which service recommended him to the favour of Henry VII. He was a captain of the pioneers at the siege of Therouanne, under Henry VIII. by whom he was made chancellor of the exchequer for life, and lieutenant of Calais and the Marches; appointed to conduct the Lady Mary, the king's sister, into France on the marriage with Louis XII.; and had the extraordinary fortune of continuing in favour with Henry VIII. for the space of eighteen years. He died at Calais in 1532, aged sixty-three. By King Henry's command he translated Froissart's *Chronicle*, which was printed in 1532 by Richard Pinson, the scholar of Caxton, and the fifth on the list of English printers. His other works were a whimsical medley of translations from French, Spanish, and Italian novels, which seem to have been in vogue then, as they were afterwards in the reign of Charles II. These were, the *Life of Sir Arthur*, an Armoric Knight; the *Famous Exploits of Sir Hugh Bourdeaux*; *Marcus Aurelius*; and the *Castle of Love*. He composed also a book on the duties of the inhabitants of Calais; and a comedy entitled *Ite in Vineam*, which is mentioned in none of our catalogues of English plays. Anthony Wood says it was usually acted at Calais after vespers.

BOURDALOUE, LOUIS, a celebrated preacher among the Jesuits, and one of the greatest orators that France has ever produced, was born at Bourges on the 20th of August 1632. At the age of sixteen he entered the Society of Jesus, of which he was destined to become one of the greatest ornaments, and there completed his studies. His able masters, who early distinguished his talents, successively confided to him the chairs of humanity, of rhetoric, of philosophy, and of moral theology; and it was only after passing through these different probationary employments that he arrived at the eminent post which was designed for him, and was deemed qualified for mounting the pulpit.

In order to form an idea of the difficulties which he had to surmount, and of the talents which he displayed, it is only necessary, on the one hand, to call to mind the ridiculous manner and inflated style of the preachers of that period; and, on the other, to figure the young Jesuit at issue with the bad taste as well as the bad habits of the time; combating at once the passions, the vices, the weaknesses, and the errors of humanity, and overcoming his enemies, sometimes with the arms of faith, and sometimes with those of reason.

At first he preached for some time in the province, but his superiors afterwards called him to Paris. This took place in 1669, at the most brilliant epoch of the age of Louis XIV., when nothing was talked of but the victories of Turenne, the festivities of Versailles, the master-pieces of Corneille and Racine, the encouragement afforded to the arts, and the general impulse given to the human mind. Bourdaloue suddenly appeared in the midst of these fascinations, and, far from diminishing their effects, the severity of his ministry, and the gravity of his eloquence, served rather to enhance their splendour. His first sermons met with prodigious success, and all voices were raised in loud applause of the preacher. Madame de Sévigné, sharing the universal enthusiasm, wrote to her daughter that "she had never heard anything more beautiful, more noble,

Bourchier
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Bourdaloue.

more astonishing, than the sermons of Father Bourdaloue." Louis XIV. also wished to hear him, and the new preacher was in consequence sent to court, where he preached the Advent in 1670, and the Lent in 1672; and he was afterwards called for the Lents of 1674, 1675, 1680, and 1682, and for the Advents of 1684, 1689, and 1693. This was a thing unheard of before, the same preacher being rarely called three times to court. Bourdaloue, however, appeared there ten times, and was always received with the same ardour. Louis XIV. said that "he loved better to hear the repetitions of Bourdaloue than the novelties of any one else." After the revocation of the edict of Nantes, he was sent to Languedoc to preach to the Protestants, and confirm the newly-converted in the Catholic faith; and in this delicate mission he managed to reconcile the interests of his ministry with the sacred rights of humanity. He preached at Montpellier in 1686, with prodigious success; Catholics and Protestants being all equally eager to recognise in this eloquent missionary the apostle of truth and of virtue.

In the last years of his life Bourdaloue abandoned the pulpit, and devoted himself to charitable assemblies, hospitals, and prisons, where his pathetic discourses and insinuating manners never failed of their effect. He had the art of adapting his style and his reasonings to the condition and the understanding of those to whom he addressed either counsel or consolation. Simple with the simple, erudite with the learned, and a dialectician with sophists and disputants, he came off with honour in all the contests in which zeal for religion, the duties of his station, and love of mankind, led him to engage. Equally relished by the great and by the commonalty, by men of piety and by people of the world, he exercised till his death a sort of empire over all minds; and this ascendancy he owed as much to the gentleness of his manners as to the force of his reasonings. "His conduct," says one of his contemporaries, "is the best answer that can be made to the *Lettres Provinciales*." No consideration was ever capable of altering his frankness or corrupting his probity.

Boileau, who detested the Jesuits, loved and often visited Bourdaloue. He may with justice be regarded as the reformer of the pulpit and the founder of Christian eloquence among the French. That which distinguishes him from other preachers is the force of his reasoning, and the solidity of his proofs. Never did Christian orator infuse into his discourses more majesty, dignity, energy, and grandeur. Like Corneille, he has been charged with overlabouring his diction, and accumulating idea upon idea with a needless superfluity of illustration,—of speaking more to the understandings than to the hearts of his auditors, and sometimes enervating his eloquence with too frequent a use of divisions and subdivisions. But even in subscribing to these criticisms, which are to a certain extent well founded, it is impossible not to admire the inexhaustible fecundity of his plans,—the happy talent, *velut imperatoria virtus*, which he possessed, of disposing his reasonings in the order best calculated to command victory,—the exact, constrictive logic with which he excludes sophisms, contradictions, and paradoxes,—the art with which he lays the foundations of our duty in our interest,—and, finally, the inestimable secret of converting the details of manners and habits into so many proofs of his subject. Parallels have often been drawn between Bourdaloue and Massillon; but the talents of these great pulpit orators lay in different directions, and they may therefore be more fitly contrasted than compared. If Massillon is now read with a more lively interest, he owes this advantage to the charms of his style rather than to the force of his reasonings. Among the cri-

tics of the present day, the preference is unhesitatingly given to the rival of Racine, to the painter of the heart, to the author of the discourse on the small number of the elect; but if we consult the contemporaries of Massillon himself, we shall find that they assign him only the second rank. According to them, Bourdaloue preached to the men of a vigorous and masculine age; Massillon to those of a period remarkable for its effeminacy. Bourdaloue raised himself to the level of the great truths of religion; Massillon conformed himself to the weakness of the men with whom he lived. The bishop of Clermont will always be read; but if the simple Jesuit could raise his commanding voice from the tomb, and again roll forth a majestic stream of divine truth, the courtly accents of his rival would no longer be heard, and the charms of his diction would be forgotten. The first part of his celebrated *Passion*, in which he proves that the death of the Son of God is the triumph of his power, has generally been considered as the great masterpiece of Christian eloquence. Bossuet has said nothing stronger or more elevated. The second part, however, is inferior to the first, though, considered by itself, alike beautiful and convincing.

The discourses of Bourdaloue have been described by a celebrated French critic as embodying in them a complete course of theology. This is perhaps going a little too far; but still their general merit is very great, and for nothing are they more distinguished than their comprehensiveness. As to the diction of this great preacher, it is always natural, clear, and correct; sometimes deficient in animation, but without vacuity or languor, and generally relieved by outbursts of much force and originality. With regard to his proofs, again, nothing can be more irresistible, when he confines himself to the exposition of the great doctrines and precepts of Christianity. He generally promises to demonstrate, but he does so because he is conscious of his strength; and he never fails to keep his word. "Au total," says the critic above referred to, "je croirais que Massillon vaut mieux pour les gens du monde, et Bourdaloue pour les prédicateurs; l'un attirera le monde à la religion, par tout ce qu'elle a de douceur et de charmes; l'autre éclairera et affermira le Chrétien dans sa foi, par tout ce qu'elle a de plus haut en conception et de plus fort en appui." Two editions of Bourdaloue's works were published at Paris in 1707 and the years immediately following, by Père Bretonneau, a Jesuit; one in 14 volumes 8vo, and the other, from which the editions of Rouen, Toulouse, and Amsterdam, were afterwards printed, in 15 volumes 12mo. The works are distributed as follows, viz. 1. *Deux Avents, prêché devant le Roi*, 1 vol.; 2. *Carême*, 3 vols. 8vo, or 4 vols. 12mo; 3. *Mystères*, 2 vols.; 4. *Fêtes des Saints, Vêtures, Professiones, Oraisons Funèbres*, 2 vols.; 5. *Dominicales*, 3 vols.; 6. *Exhortations et Instructions Chrétiennes*, 2 vols.; 7. *Rétraite Spirituelle*, 1 vol.; 8. *Pensées*, in 2 and in 3 vols. In 1812, the Abbé Sicard published at Paris, in 8vo and in 12mo, *Sermons Inédits de Bourdaloue*; and soon after appeared the Versailles edition of the *Œuvres de Bourdaloue* in 16 volumes 8vo. (*Vie de P. Bourdaloue*, par Madame de Pringy; *Esprit de Bourdaloue*, par l'Abbé de la Porte; and *Biographie Universelle*.) (A.)

BOURDEAUX, an arrondissement in the department of the Gironde, in France, extending over 1668 square miles, and comprehending eighteen cantons and 153 communes, with a population of 222,268 persons. The capital is the city which gives its name to the arrondissement. It is the see of an archbishop, and situated in a broad plain, in a circular form, on the left bank of the river Garonne, about 45 miles from its mouth, over which is a bridge 3600 feet in length. It is a well-built city, and, since the return of peace, its trade has flourished, while a great im-

Bordeaux provement has taken place both in its extent and its beauty. Some of the streets are peculiarly striking, especially in the quarter called Chapeau Rouge, as well as several of the public buildings, particularly the palace, the grand theatre, the exchange, and the cathedral. As a place of commerce it is superior to any other in France, and vessels sail to and arrive from every part of the world. The chief articles exported are wine, brandy, and liqueurs. It is also a manufacturing city, and in it are large refineries of sugar, snuff and tobacco mills, potteries, glass-houses, and other branches of industry. As a sea-port, Bourdeaux possesses between 300 and 400 ships, employed chiefly in the trade with the colonies. The inhabitants are said to have increased so as now to amount to 100,000, besides the soldiery. Long. O. 40. 4. W. Lat. 44. 50. 14. N.

BOURDELOT, JOHN, a learned French critic, who lived at the close of the sixteenth and beginning of the seventeenth centuries. He distinguished himself by annotations on Lucian, Petronius, and Heliodorus; a Universal History; Commentaries on Juvenal; a Treatise on the Etymology of French words; and several other works which were never published. There was also an Abbé Bourdelot, nephew of John, who changed his name from Peter Michon to oblige his uncle. He was a celebrated physician in Paris, and gained great reputation by a Treatise on the Viper, and other works. He died in 1685.

BOURDON, SEBASTIAN, a painter, born at Montpellier in 1616. He studied seven years at Rome, and acquired so great a reputation, that, on his return to France, he was appointed rector of the academy of painting in Paris, being the first who held that office. He succeeded better in landscapes than in history. His pieces are seldom finished, and those which received his last touches are not always the finest. The most esteemed of all his performances is the martyrdom of St Peter, drawn for the church of Notre Dame, and kept as one of the choicest rarities of that cathedral. Bourdon was a Calvinist, and much valued and respected, even in a Catholic country, because his life and manners were unexceptionable. He died in 1673, aged fifty-four.

BOURG, an arrondissement of the department of Ain, in France, 672 square miles in extent, comprehending ten cantons and 119 communes, with 111,927 inhabitants. The capital, a city of the same name, on the river Reyssouse, has several cotton manufactories and tanneries, and 7417 inhabitants. Long. 5. 8. E. Lat. 46. 12. N.

BOURGANEUF, an arrondissement of the department of the Creuse, in France, comprehending four cantons and forty-nine communes, with 33,249 inhabitants. Its extent is 368 square miles. The chief place is a market-town of the same name, containing 2150 inhabitants.

BOURGES, an arrondissement of the department of the Cher, in France, extending over 942 square miles, containing ten cantons and 121 communes, with 89,594 inhabitants. The chief place, a city of the same name, is situated at the confluence of the rivers Aron and Evre. It still retains the old Roman walls, and eighty lofty towers. It is also the see of an archbishop, and, besides the cathedral, has sixteen churches, and several hospitals and other charitable foundations. The inhabitants are 18,200. Long. 17. 11. E. Lat. 47. 4. N.

BOURGET, DOM JOHN, an ingenious French antiquary, was born at the village of Beaumains, near Falaise, in 1724. He was educated at the grammar school at Caen, whence he was removed to the university of that place, and there pursued his studies with great diligence and success till 1745, when he became a Benedictine monk of the abbey of St Martin de Seëz. Some time after this he was appointed prior claustral of this abbey, and continued six years in that office. He was then nominated prior of

Tiron en Perche; and being translated to the abbey of Bourgoing. St Stephen at Caen, in the capacity of sub-prior, he managed the temporalities of that religious house during two years, as he did their spiritualities for one year longer; after which he resigned his office. His superiors, sensible of his merit and learning, removed him to the abbey of Bec, where he resided till 1764. He was elected an honorary member of the Society of Antiquaries of London in 1765; and the same year returned to the abbey of St Stephen at Caen, where he continued till the time of his death. These honourable offices, to which he was promoted on account of his great abilities, enabled him not only to pursue his favourite study of the history and antiquities of the principal Benedictine abbeys in Normandy, but likewise gave him access to all their charters, deeds, register-books, and other documents. These he examined with great care, and left behind him, in manuscript, large and accurate accounts of the abbeys of St Peter de Jumièges, St Stephen, and the Holy Trinity at Caen, founded by William the Conqueror and his Queen Matilda, with a particular history of the abbey of Bec, all written in French. The *History of the Royal Abbey of Bec*, which he presented to Dr Ducarel in 1764, is only an abstract of his larger work. This ancient abbey, which has produced several archbishops of Canterbury, and other prelates of England, is frequently mentioned by our old historians. The death of Bourget, which happened on new-year's day 1776, was occasioned by his unfortunate neglect of a hurt he had received in his leg by falling down two or three steps in going from the hall to the cloister of the abbey of St Stephen at Caen.

BOURGOING, JOHN FRANCIS DE, was born of an ancient family at Nevers, on the 20th November 1748. He was educated at the military school of Paris, and devoted himself particularly to the study of the languages. At the age of seventeen he was sent by the government to Strasbourg, where he studied public law under the celebrated Professor Kugler. Having spent three years there, he received a commission in the regiment of Auvergne. When scarcely twenty, he was appointed secretary of legation at the diet of Ratisbon; and after having been employed during four years in the discharge of various diplomatic functions, he returned to his regiment, where he continued to occupy himself with the study of public law. In 1777 he went as first secretary to M. de Montmorin, who was appointed ambassador to the court of Madrid. Eight years afterwards, Montmorin having been recalled, Bourgoing remained eighteen months at Madrid in the character of chargé d'affaires. It was during this long residence in Spain that he collected the materials for his *Tableau de l'Espagne Moderne*. On his return to France in 1787, he was sent as minister plenipotentiary to Hamburg; and, in 1791, he went in a similar capacity to Madrid, where he remained until the month of March 1793. Having again returned to France during the most troublesome period of the Revolution, he retired to his native town, where for some time he filled the first municipal office. The revolution of the 18th Brumaire (10th November 1799) drew him at length from the bosom of privacy. In 1801 the first consul appointed him minister plenipotentiary at the court of Denmark, and afterwards at that of Sweden. In 1808 he was sent as minister plenipotentiary to Saxony. At Dresden he was attacked by the complaint which terminated his life; and he died at Carlsbad, whither he had repaired for the benefit of the waters, on the 20th of July 1811, at the age of sixty-three.

Bourgoing was a man of the most disinterested integrity; and he died poor, although he had been employed in various situations in which he might have found opportu-

Bour-
guignons
||
Bourignon.

nities of acquiring wealth. He left a family of five children, three sons and two daughters. The following is a list of his publications: 1. *Nouveau Voyage in Espagne, ou Tableau de l'état actuel de cette Monarchie*, first published in 1789, 3 vols. 8vo. The fourth edition augmented, was published under the title of *Tableau de l'Espagne Moderne*, in 1807, in 3 vols. 8vo, with an atlas. This is the best known and most esteemed of his works, and has been translated into various languages. 2. *Mémoires Historiques et Philosophiques sur Pié VI. et sur son Pontificate*, 2 vols. 8vo, 1798; second edition, 1800. Some prefer the first edition of this work, although the second is continued to the death of Pius VI. 3. *Histoire des Flibustiers, traduite de l'Allemand de M. d'Archenholtz*, Paris 1804, 8vo. 4. *Histoire de l'Empereur Charlemagne, traduction libre de l'Allemand du Prof. Hegewisch*, 1805, 8vo. 5. *Correspondence d'un jeune Militaire, ou Mémoires du Marquis de Lusigny et d'Hortense de S. Just*, 1778, 2 vols. 12mo. Bourgoing translated some other works from the German, and published several tracts of little importance. In 1808 he published an edition of the *Travels of the Duc du Chatelet in Portugal*; and he was the editor of the *Correspondence of Voltaire with Bernis*. (κ.)

BOURGUIGNONS, or BURGUNDIANS, one of the northern nations who overran the Roman empire, and at length settled in Gaul. They were of great stature, and warlike in their disposition; for which reason the emperor Valentinian engaged them in his service against the Germans. They lived in tents, close to each other, that they might the more readily unite in arms on any unforeseen attack; and these conjunctions they called *burgs*, which were to them exactly what towns are to us. Sidonius Apollinaris tells us that they wore long hair, took great pleasure in singing, and were fond of praise for their vocal talents; that they ate enormous quantities, and anointed their hair with butter, deeming that unction extremely ornamental. Their crown was at first elective, and the authority of their kings expired with the occasion that had produced it. They were not only accountable for their own misconduct, but likewise for the accidents of nature and the caprice of fortune; being deposed if they lost a battle, or if they succeeded ill in any enterprise, or if any event did not correspond with the expectations of the public. Nor were they more favourably treated in case of a bad harvest or vintage, or in the event of an epidemical distemper ravaging the state. At first the Burgundians were governed by many kings, and *henden* was the title of the royal dignity. But in latter times they were subject to one sovereign, and became humane and civilized, especially when Christianity was propagated in their country. Before that epoch their religion was much the same with that of the other northern nations. They had many priests, the chief of whom was distinguished by the name of *sinistrus*. He was perpetual, and they paid him great respect and veneration.

BOURIGNON, ANTOINETTE, a famous female preacher and pretended prophetess, was born at Lisle in 1616. At her birth she was so deformed that it was debated some days in the family whether it would not be proper to stifle her as a monster; but her deformity diminishing, she was spared, and afterwards attained such a modicum of beauty, or rather so far diminished in ugliness, that she had her admirers. From her childhood to her old age she had an extraordinary turn of mind. She set up as a reformer, and published a great number of books filled with very singular notions; the most remarkable of which are entitled *The Light of the World*, and *The Testimony of Truth*. She was naturally an enemy to reason and common sense, which she maintained ought to give place to the illumination of divine faith; and asserted, that whenever any one was born again by embracing her doc-

trine, she felt the pains and throes of a woman in labour. Of her pretended visions and revelations there have been published many disgusting instances, which we shall not shock the reader by repeating. Besides these and other extravagancies, she had some very repulsive qualities. Her temper was morose and peevish, her cupidity excessive, her character as a woman questionable, and her habits eccentric and unfeminine. She dressed like a hermit, and travelled through France, Holland, England, and Scotland, where she made a strong party of some thousand sectarists, known by the name of *Bourignonists*. She died at Franeker in October 1680. Her principal works are, 1. Treatise on the Blindness of Men, and the Light born in Darkness; 2. The New Heaven and the Reign of Antichrist; 3. A Treatise on the Solid Virtue; 4. The Renewal of the Evangelical Spirit; and, 5. Innocence recognised and Truth discovered, addressed to the celebrated Arnauld. This strange woman pretended that the true church was extinct, and that God had commissioned her to re-establish it. The object of her works was to guide her followers to an imaginary perfection, and to make them renounce all forms in favour of an interior and mystic worship. Though possessed of a considerable fortune, to which she had succeeded, she never gave any thing to the poor, on the pretence that they might make a bad use of her liberality, and that the benefits we have received from God ought only to be employed for his greatest glory; a strange perversion of the charitable spirit of the gospel. Yet by an absurd though not unfrequent inconsequence of conduct, this woman bequeathed all her property to an hospital. Her mind was lively and acute, her style easy, and her eloquence seductive; endowments which enabled her to make, at different times, a considerable number of proselytes.

BOURNE, a market-town of the hundred of Aveland, in the county of Lincoln, 97 miles from London. It is situated in a pleasant country, very productive in corn and cattle; and is at the head of a fine stream, which runs to Spalding. The market is held on Saturday. The inhabitants amounted in 1801 to 1474, in 1811 to 1591, and in 1821 to 2029.

BOURO, an island in the East Indian Ocean, between the Moluccas and Celebes. It is well cultivated, and is now subject to the Dutch, who have built a fortress there. Some mountains in it are exceedingly high, and the sea on one side is uncommonly deep. It produces nutmegs and cloves, as well as cocoa and banana trees, besides many vegetables introduced by the Dutch. It is about 50 miles in circumference. Long. 129. E. Lat. 4. 30. S.

BOUSSAC, an arrondissement of the department of the Creuse, in France, extending over 370 square miles, and comprehending four cantons and fifty-seven communes, with 32,439 inhabitants. The capital is a market-town of the same name, at the junction of the rivers Benron and Creuse.

BOUTS-RIMES, a popular term in the French poetry, signifying certain rhymes, disposed in order, and given to a poet, together with a subject, to be filled up with verses ending in the same words, and in the same order. The invention of the bouts-rimés is ascribed to one Ducot, a poet, in the year 1649. In fixing the bouts, it is usual to choose such as seem the remotest, and have the least connection. Some good authors fancy that these rhymes are of all others the easiest; that they assist the invention, and furnish new thoughts. Sarrasin has a poem on the defeat of the bouts-rimés. But the academy of Lanternists at Toulouse contributed towards keeping in countenance the bouts-rimés, by proposing annually a set of fourteen, to be filled up on the glories of the Grand Monarque, and by offering a medal as the reward of the victorious sonneteer.

The following, filled up by Commire, is a specimen of these conceits :

*Tout est grand dans le roi, l'aspect seul de son
Rend nos fiers ennemis plus froids que des
Et Guillaume n'attend que le tems des
Pour se voir succomber sous un bras si
Qu'on ne nous vante plus les miracles d'
Louis de bien régner lui feroit des
Horace en vain s'égalé aux dieux dans ses
Moins que mon héros il étoit sage et*

buste
glaçons ;
moissons,
robuste,
Auguste.
leçons ;
chansons ;
juste.

BOUTON. See BOOTON.

BOUZIER, an arrondissement of the department of the Ardenne, in France, extending over 519 square miles, and comprehending eight cantons and 144 communes, with 56,157 inhabitants. The chief place is the market-town of the same name, on the banks of the river Aisne, which here forms two islands. The inhabitants are only about 1800.

BOVEY-TRACY, a market-town in the hundred of Teignbridge and county of Devon, 188 miles from London. It is remarkable for the production of a pipe-clay of great value in the potteries, and for a peculiar kind of coal. A court for the duchy of Lancaster is held here. The market is held on a Thursday. The inhabitants amounted in 1801 to 1431, in 1811 to 1485, and in 1821 to 1685.

BOW (*arcus*), a weapon of offence, made of wood, horn, or other elastic matter, which, being strongly bent by means of a string fastened to its two ends, throws out an arrow with great force in suddenly recovering its natural state. It is also called the *long-bow*, by way of distinction from the cross-bow or arbalest.

The bow is the most ancient and the most universal of all weapons. It has been found to obtain amongst the most barbarous and remote tribes, and it is an invention at once so obvious and so simple that no nation has missed it.

The use of the bow and arrow was first abolished in France under Louis XI. and in their place were introduced the Swiss arms, that is, the halberd, pike, and broadsword. The long-bow was formerly in great vogue in England; most of our victories in France were acquired by it, and many laws were made to regulate and encourage its use. The parliament under Henry VIII. complain "of the disuse of the long-bow, heretofore the safe-guard and defence of this kingdom, and the dread and terror of its enemies."

The art of using bows is called *archery*, and those practised therein are denominated *archers* or *bowmen*. See ARCHERY.

The strength of a bow may be calculated on this principle, that its spring, or the power whereby it restores itself to its natural position, is always proportional to the distance or space it is removed therefrom.

The most barbarous nations often excel in fabricating those things which they have the greatest necessity for in the common offices of life. The Laplanders, who support themselves almost entirely by hunting, have an art of making bows which we, in these more genial parts of the world, never arrived at. Their bow is constructed of two pieces of tough and strong wood, shaved down to the same size, and flattened on each side; the two flat sides of the pieces being brought closely and evenly together, and then joined by means of a glue made of the skins of perch, which they make superior in strength to ours. The two pieces, when once united in this manner, never separate, and the bow is of much more force to expel the arrow than it could possibly have been under the same dimensions if formed only of one piece.

Among the ancients, the bow-string was made of horse hair, and hence called *hippica*; though Homer's bow-strings were frequently made of hides cut into small thongs,

whence *roça Boia*. The uppermost part of the bow, to which the string was fastened, was called *νοβων*, being commonly made of gold, and the last thing towards finishing the bow. The Grecian bows were frequently beautified with gold or silver; whence *aurei arcus*, and the epithet of *Αργυροτοχος* bestowed on Apollo. But the matter of which they were ordinarily composed seems to have been wood, although they were anciently, Scythian-like, made of horn, as appears from the description of the bow of Pandarus in Homer.

The invention of the bow is usually ascribed to Apollo. And it was communicated to the primitive inhabitants of Crete, who are said to have been the first of mortals that understood the use of bows and arrows. Accordingly, even in later ages, the Cretan bows were famous, and preferred by the Greeks to all others. Some, however, preferred to honour Perses, the son of Persens, as the inventor of the bow; while others ascribe it to Scythus, son of Jupiter, and progenitor of the Scythians, who were excellent in this art, and by many reputed the first masters of it. From them it was derived by the Grecians, some of whose ancient nobility were instructed by the Scythians in the use of the bow, which in those days passed for a most princely education. It was first introduced into the Roman army during the second Punic war.

The Scythian bow was famous for its incurvation, which distinguished it from the bows of Greece and other nations, being so great as to form a half moon or semicircle; and hence the shepherd in Athenæus, describing the letters in Theseus's name, and expressing each of them by some apposite resemblance, compares the third to the Scythian bow, meaning not the more modern character Σ, but the ancient C, which is semicircular, and bears the third place in the name of the hero, ΘΗCEVC, as spelt in ancient Greek.

Cross-Bow is also called *arbalest* or *arbalet*, which word is derived from *arbalista*, or rather *arcubalista*, "a bow with a sling." The arbalet consists of a steel bow set in a shaft of wood, furnished with a string and a trigger; and it is bent with a piece of iron fitted for that purpose. It serves to project bullets, large arrows, darts, and other missiles. The ancients had large machines for throwing many arrows at once, called *arbalets* or *baliste*.

Bow, in *Ship-Building*. See SHIP-BUILDING.

Bow-NET or *Bow-wheel*, an engine for catching fish, chiefly lobsters and craw-fish. It is made of two round wicker baskets, pointed at the end, one of which is thrust into the other; while at the mouth is a little rim, four or five inches broad, and bent somewhat inwards. It is also used for catching sparrows.

Bow-LINE or *Bowling*, a rope fastened near the middle of the leech, or perpendicular edge of the square sails, by three or four subordinate parts called *bridles*. It is only used when the wind is so unfavourable that the sails must be all braced sideways, or close hauled to the wind. In this situation the bow-lines are employed to keep the weather or windward edges of the principal sails tight, forward, and steady, without which they would always be shivering, and rendered incapable of service. To *check* the bow-line is to slacken it when the wind becomes large.

Bow-PIECES are the pieces of ordnance at the bow of a ship.

Bow-BEARER, an inferior officer of the forest, who is sworn to make inquisition of all trespasses against vert or venison, and to attach offenders.

BOW ISLAND, in the South Pacific Ocean, is situated towards the eastern extremity of the Society Isles. It is a low-lying island, about ten or twelve leagues in compass, and has the extraordinary figure of a bow. Long. 141. 12. W. Lat. 18. 23. S.

Bow
Bow
Island.

Bower
||
Bowyer.

BOWER, in *Gardening*, a place under covert of trees, differing only from an arbour as being round or square, and made with a kind of dome or ceiling at top, whereas the arbour is always built long and arched.

BOWL denotes either a ball of wood for the use of bowling, or a vessel of capacity to contain liquors.

BOWLDER STONES, small stones of a roundish figure, and no determinate size, found on the sea-shore, and on banks, or rather channels, of rivers.

BOWLING, the art of playing at bowls. This game is practised either in open places, as bares and bowling-greens, or in close bowling-alleys.

The skill of bowling depends much on a knowledge of the ground, and the right choice of a suitable bowl; as for close alleys the flat bowl, while for green swards, plain and level, the bowl as round as a ball is preferred.

The terms used in bowling are, to *bowl wide*, which is when the bias does not hold, or is not strong enough; *narrow*, when it is too strong or holds too much; *finely bowled*, is when the ground is well chosen, and the bowl passes near the block, even though it goes much beyond it; *bowling through*, or a *yard over*, is done in order to move the block; an *over-bowl*, is that which goes beyond it; a *bowl laid at hand*, is that put down within the gamester's reach to be in the way of the next bowler, and hinder his having the advantage of the best ground; *bowling at length*, is neither bowling through nor short; a *dead length*, is a just or exact one; *throwing* or *flinging*, is discharging a bowl with a strength purposely too great for a length, in order to carry off either the block or some near bowl; *bowl-room*, or *missing wood*, is when a bowl has free passage without striking on any other; *get off*, is when a bowl, being narrow, is wanted to be wider; *bowl best at block*, is that nearest the block; and *drawing a cast or bowl*, is to win it by bowling nearer without stirring either the bowl or block. A bowl is said to *rub* when it meets with some obstacle in the ground which retards its motion and weakens its force; and *it is gone* when far beyond the block. *Block* signifies a little bowl laid for a mark, and is also called a *jack*. *Mark* is a proper bowling distance, not under so many yards, and being at least a yard and a half from the edge of the green; *ground*, is a bag or handkerchief laid down to mark where a bowl is to go; *lead* is the advantage of throwing the block and bowling first; *cast*, is one best bowl at an end; and *end*, is a hit, or when all the bowls are out. The *game*, or *up*, is five casts or best bowls.

BOWLING-GREEN, in *Gardening*, a kind of parterre in a grove, laid with fine turf, requiring to be frequently mowed, and laid out in compartments of divers figures, with dwarf-trees and other decorations. Bowling-greens are of English origin, but have been adopted by the French and Italians, who have them only for ornament, being unacquainted with or not fancying the exercise, on account of which they were first made in England.

BOWSPRIT, or **BOLTSPRIT**, a kind of mast, resting slopewise on the head of the main stern, and having its lower end fastened to the partners of the fore-mast, and further supported by the fore-stay. It carries the sprit-sail, sprit-top-sail, and jack-staff; and its length is usually the same with that of the fore-mast.

BOWYER, **WILLIAM**, the most learned printer of his age, was born at Whitefriars, in London, on the 17th December 1699. His father, whose name was also William, had been eminent in the same profession; and his maternal grandfather, Icabod Dawks, was employed in printing the celebrated Polyglot Bible of Bishop Walton. At a proper age he was placed for grammatical education under the care of Mr Ambrose Bonwicke, a nonjuring clergyman of piety and learning, who then lived at Headly, near Leatherhead, in Surrey. Here Mr Bowyer made great pro-

gress in literature, and a firm attachment commenced betwixt him and his master. On the 30th of January 1713 the whole property of the elder Mr Bowyer was destroyed by fire, on which occasion Mr Bonwicke generously undertook the education of his pupil for a year. In 1716 young Mr Bowyer was admitted a sizar at St John's College, Cambridge, where Dr Robert Jenkin was at that time master. He continued at the college under the tuition of the reverend Dr John Newcombe till June 1722, during which period he probably took his degree of bachelor of arts; and he appears to have been desirous of obtaining a fellowship, though it is not certain that he ever stood a candidate for that honour. Soon after this he had an opportunity of repaying the kindness which Mr Bonwicke had shown him, by officiating some time after his death in the capacity of schoolmaster for the benefit of his family.

Mr Bowyer now entered into the printing business along with his father. One of the first books which received the benefit of his correction was the complete edition of Selden, in three volumes folio, by Dr David Wilkins. This edition was begun in 1722, and finished in 1726; and Mr Bowyer's great attention to it appeared in his drawing up an epitome of Selden *de Synedriis*, as he read the proof sheets. In 1727 he drew up an excellent sketch of William Baxter's Glossary of Roman Antiquities, called "A view of a book entitled *Reliquiæ Baxterianæ*, in a letter to a friend." By this first public proof of Mr Bowyer's abilities, Dr Wotton and Mr Clarke were highly pleased; but as it was never published, and a very few copies printed, it is seldom found with the glossary. In 1727 Mr Bowyer lost his mother. In October 1728 he married Miss Ann Prudom, his mother's niece, a very accomplished lady, by whom he had two sons, William and Thomas; the former of whom died in nonage, and the latter survived his father. In 1729 Mr Bowyer published a treatise, entitled "A Pattern for young Students in the University, set forth in the Life of Ambrose Bonwicke, some time scholar of St John's College, Cambridge;" but although this treatise was generally ascribed to Mr Bowyer, it was in reality the production of Mr Ambrose Bonwicke the elder. About this time Mr Bowyer appears to have written a pamphlet against the Separatists, though neither the title nor the occasion of it are now remembered. The same year, through the friendship of the Right Honourable Arthur Onslow, he was appointed printer of the votes of the House of Commons; which office he held under three successive Speakers for near fifty years. In 1731 Mr Bowyer published, and, it is believed, translated, Voltaire's Life of Charles XII. This year also his wife died. He remained a widower till 1747, when he married a very benevolent and worthy woman, Mrs Elizabeth Bill, by whom he had no children. In 1733 he published a piece in two sheets 4to, entitled "The Beau and the Academic," being a translation from a Latin poem recited that year at the Sheldonian theatre; and in 1736 he was admitted into the Society of Antiquaries, where he became an active and useful member. In 1737 Mr Bowyer lost his father. In 1742 he published a translation of Trapp's Latin Lectures on Poetry, in which he was assisted by Mr Clarke, though the latter had a contemptible opinion of the performance.

In 1749 Mr Bowyer, along with Dr Burton, was virulently attacked by Dr King, in a piece entitled *Elogium famæ inserviens Jacci Etonensis sive Gigantis*, or the praises of Jack Eaton, commonly called Jack the Giant. This abuse was probably occasioned by Mr Bowyer's having hinted in conversation some doubts concerning the doctor's skill in Latin. He, however, drew up some strictures in his own defence, which he intended to insert at the end of a preface to Montesquieu's *Reflections*; but by

Mr Clarke's advice they were omitted. In 1750 a prefatory critical dissertation and some notes were annexed by our author to Kuster's Treatise *De usu Verborum mediocrum*; a new edition of which, with further improvements, appeared in 1773. He likewise wrote, about the same time, a Latin preface to Leede's *Veteres Poetæ citati*. Being soon after employed to print an edition of Colonel Bladen's translation of Cæsar's Commentaries, that work received considerable improvements from Mr Bowyer's hands, with the addition of notes signed TYPGR. In the subsequent editions of this work, though printed by another person during Mr Bowyer's lifetime, the same signature was unjustly retained. In 1751 he wrote a long preface to Montesquieu's *Reflections on the Rise and Fall of the Roman Empire*; translated the dialogue between Sylla and Socrates; and made several corrections on the work from the Baron's *Spirit of Laws*, improving it with notes of his own. A new edition, with many new notes, was printed in 1759. In 1751 he also published a translation of Rousseau's paradoxical oration, which gained the prize at the academy of Dijon in 1750, and first announced that singular genius to the attention and admiration of Europe. On the publication of the third edition of Lord Orrery's *Remarks on the Life and Writings of Dr Swift*, in 1752, Mr Bowyer wrote and printed, but never published, "Two Letters from Dr Bentley in the Shades below, to Lord Orrery in a Land of Thick Darkness." The notes signed B, in the ninth quarto volume of Swift's works, are extracted from these letters. In 1753 he endeavoured to allay the ferment occasioned by the Jews' Bill; and with this view he published, in quarto, "Remarks on the Speech made in Common Council, on the Bill for permitting persons professing the Jewish religion to be naturalized, so far as prophecies are supposed to be affected by it." This little tract was written with spirit, and well received by those who were superior to narrow prejudices. Its design was to show, that, whatever political reasons might be alleged against the bill, Christianity was in no danger of being prejudiced by the protection promised to the Jews. The same year some of Mr Bowyer's notes were annexed to Bishop Claton's translation of "A Journal from Grand Cairo to Mount Sinai and back again." In 1754 Mr Bowyer, with a view of lessening his fatigue, entered into partnership with a relation; but some disagreement arising, the connection was dissolved in three years. On the death of Mr Richardson in 1761, Mr Bowyer succeeded him as printer to the Royal Society, through the favour of the Earl of Macclesfield; and, under the friendship of five successive presidents, he enjoyed that office till his death.

In 1763 Mr Bowyer published an excellent edition of the Greek Testament, in two vols. 12mo. It appeared under the following title: *Novum Testamentum Græcum; ad fidem Græcorum solum Codicum MSS. nunc primum impressum, ad stipulante Joanne Jacobo Wetstenio, juxta Sectiones Jo. Alberti Bengelii divisum; et nova interpretatione sæpius illustratum: Accessere in altero volumine, Emendationes Conjecturales virorum doctorum undecunque collectæ*. This sold with great rapidity. The Conjectural Emendations were well received by the learned, and are thought to be a valuable work. The president and fellows of Harvard College in Cambridge expressed their approbation of this edition in very high terms, in a letter to Mr Bowyer, written in the year 1767. "This work," say they, "though small in bulk, we esteem as a rich treasure of sacred learning, and of more value than many large volumes of the commentators." A second edition of the Conjectures on the New Testament, with very considerable enlargements, was separately published in one volume 8vo in 1772. Bishop Warburton having censured a pas-

sage in the former edition, Mr Bowyer sent him a copy of this book, with a conciliatory letter. Dr Warburton's Divine Legation had received very considerable advantage from Mr Bowyer's corrections, and this even in an edition which was necessarily given to another press. In 1761 he was employed to print his lordship's Doctrine of Grace. A second edition being soon wanted, and Mr Bowyer not having been intrusted with the care of it, he prepared a series of letters to the bishop in his own defence; and of these, together with a few he had formerly received from that great writer, he afterwards printed *twelve copies*, of which *ten* were subsequently destroyed. However, there is the best authority for asserting, that notwithstanding any little altercations which happened, Dr Warburton always retained a sincere regard for our typographer. In 1765, at the request of Thomas Hollis, Esq. Mr Bowyer wrote a short Latin preface to Dr Wallis's *Grammaticæ Linguae Anglicanæ*. He wrote also a large English preface for the same work, which, however, was not printed. In 1766 he entered into partnership with Mr Nichols, who had been trained by him to the profession, and had for several years assisted him in the management of his business. The same year Mr Bowyer wrote a Latin preface to *Joannis Harduini, Jesuitæ, ad Censuram Scriptorum veterum Prolegomena*. In 1767 he was appointed to print the journals of the House of Lords and the rolls of Parliament. This year he printed Mr Clarke's excellent and learned work on *The Connection of the Roman, Saxon, and English Coins*, and wrote some notes upon it, which are interspersed throughout the volume with those of the author. Part of the Dissertation on the Roman sesterce was likewise Mr Bowyer's production; and the index, which is an uncommonly good one, was drawn up by him entirely.

In January 1771 Mr Bowyer lost his second wife. In the Philosophical Transactions of this year was printed a very ingenious *Inquiry into the Value of the ancient Greek and Roman Money*, by Mr Matthew Raper. But his opinions not coinciding with those of Mr Bowyer, the latter printed a small pamphlet, entitled *Remarks occasioned by a late Dissertation on the Greek and Roman Money*. In 1773 three little tracts were published by him, under the title of *Select Discourses*, treating, 1. Of the correspondence of the Hebrew months with the Julian, from the Latin of Professor Michaelis; 2. Of the Sabbatical years, from the same; 3. Of the years of Jubilee, from an anonymous writer in Masson's *Histoire Critique de la République des Lettres*. In 1774 he corrected a new edition of Schrevelius's Greek Lexicon; to which he added a number of words, which he himself had collected in the course of his studies. Considerable manuscript additions were also made by him to the lexicons of Hederic and Buxtorf, the Latin ones of Faber and Littleton, and the English Dictionary of Bailey; and he left behind him many other proofs of his critical skill in the learned languages. In 1774 was published *The Origin of Printing, in two Essays*. The original idea of this valuable tract was Mr Bowyer's, but it was completed by Mr Nichols.

Although our author, during the last ten years of his life, had been afflicted with the palsy and stone, he not only preserved a remarkable cheerfulness of temper, but was enabled to support the labour of almost incessant reading; and he regularly corrected the learned works, especially the Greek books, which came from his press. This he continued to do till within a few weeks of his death, which happened in November 1777, when he had nearly completed his seventy-eighth year. For more than half a century Mr Bowyer was unrivalled as a learned printer, and many of the most masterly productions of this kingdom issued from his press. To his literary and professional abilities he added an excellent moral charac-

Bowyers
||
Boxing.

ter; and he was particularly distinguished by his inflexible probity, and an uncommon alacrity in relieving the necessitous.

BOWYERS, artificers whose business is to make bows; in which sense bowyers are distinguished from fletchers, who made arrows. The bowyers' company in London was incorporated in 1620.

BOX, in its most common acceptation, denotes a small chest or coffer for containing articles.

Dice-Box, a narrow deep cornet, channelled within, by which the dice are shaken and thrown. This answers to what the Romans called *fritillus*. Besides the *fritillus*, the Romans, for greater security, had another kind of dice-box called *pyrgus*, *πυργος*, and sometimes *turricula*. It was placed immovably in the middle of the table, being perforated or open at both ends, and likewise channelled within; and over the top was fixed a kind of funnel, into which the dice were cast out upon the *fritillus*, and, descending, fell through the bottom on the table; by which all practising on them with the fingers was effectually prevented.

BOXERS, a kind of *athletæ*, who combat or contend for victory with their fists. Boxers are the same as the *pugiles* among the Romans. The ancient boxers battled with great force and fury, so as to dash out each other's teeth, break bones, and sometimes to kill each other. The disfigurements which the boxers underwent were such that they frequently could not be known, and were thus rendered the subject of many railleries. In the Greek Anthology there are four epigrams of the poet Lucilius, and one of Lucian, in which their disfigurements are pleasantly enough exposed.

BOXHORNIIUS, MARC ZUERIIUS, a learned critic, born at Bergen-op-Zoom in 1612, was professor of eloquence at Leyden, and at length of politics and history in the room of Heinsius. He published, 1. *Theatrum urbium Hollandiæ*, Amsterdam, 1632; 2. *Scriptores historiæ Augustæ, cum notis*, Leyden, 1632; 3. *Poetæ satyrici minores, cum commentis*, 1632; 4. Notes on Justin, Tacitus; and a great number of other works. He died in 1653, aged forty-one.

BOXING, the exercise of fighting with the fists, either naked or with a stone or leaden ball grasped in them. In this sense boxing coincides with the *pugillatus* of the Romans. When the champions had *σφαίραι*, or balls, whether of lead or stone, it was properly denominated *σφαίρομαχία*. The ancient boxing differed from the *pugna cæstum*, in which the combatants had leathern thongs on their hands, and balls to offend their antagonists withal; though this distinction is frequently overlooked, and fighting with the *cæstus* ranked as part of the business of *pugiles*. Three species of boxing may be distinguished, namely, where both the head and hands were naked; where the hands were armed and the head naked; and where the head was covered with a kind of cap, called *amphotides*, and the hands also furnished with the *cæstus*.

Boxing is an ancient exercise, having been in use in the heroic ages. Those who prepared themselves for it used all the means that could be contrived to render themselves fat and fleshy, that they might be the better able to endure blows. Hence corpulent men or women were usually

called *pugiles*, according to Terence. *Siqua est habilior paulo, pugilem esse aiunt.*

BOXING, among sailors, is used to denote the rehearsing the several points of the compass in their proper order.

BOXING is also used for the tapping of a tree, to make it yield its juice. The boxing of maple is performed by making a hole with an axe or chisel in the side of the tree, about a foot from the ground, that the liquor of which sugar is made may flow out through it.

BOYAR, a term used for a grandee of Transylvania, Wallachia, or Moldavia.

BOYAU, in *Fortification*, a ditch covered with a parapet, which serves as a communication between two principal trenches.

BOYCE, HECTOR, a distinguished historian, was born at Dundee about the year 1465, being descended of a family which for several generations had possessed the barony of Panbride or Balbride. The orthography of his surname is extremely fluctuating; it is to be found under the various modifications of Boece, Boeth, Boeis, Boys, Boyse, Boyes, Boyis, Boiss, and Boyce. The first of these, we strongly suspect, was never a name belonging to any living man in Scotland: it was formed by the French from the name of the latest Roman classic, and on that account appears to have been adopted by Bellenden in his translation of the history. The real Scottish name is a monosyllable; and we adhere to the orthography of Boyce, as being most common in our own time. He received the first rudiments of learning at Dundee, and completed his course of study in the university of Paris, where he took the degree of B. D. He was appointed a professor of philosophy in the College of Montaigu; and in this seminary he became intimately acquainted with Erasmus, who in two epistles has testified his esteem for Boyce's character.¹ In his academical station he had already distinguished himself by his talents and attainments, when King's College was founded at Aberdeen by the munificence of William Elphinstone, bishop of the diocese. The papal bull for the erection of a university had been obtained in the year 1494, but the buildings were not sufficiently advanced, nor did the lectures commence, till about the year 1500. It was not without some degree of hesitation that he consented to quit the lettered society of Paris, and to become principal of this new college; but having at length accepted the conditions, he proceeded to Aberdeen, and experienced a kind reception from the canons of the cathedral, several of whom he has commemorated as men of learning. It was a part of his duty as principal to read lectures on divinity. The sub-principal was his friend William Hay, a native of the same county, who had been his fellow-student at Dundee and at Paris, and who at length succeeded him as head of the college.² The principal's brother, Arthur Boyce, doctor of the canon, and licentiate of the civil law, was appointed professor of the canon law, and afterwards became a judge of the court of session.³ The common branches of science and literature were taught with zeal and success; and the prosperity of the institution was greatly promoted by the talents and by the reputation of Boyce.

The emoluments of his office were not such as appear

¹ *Erasmii Opera*, tom. i. tom. iii. col. 1784, edit. Clerici.—The first of these epistles introduces a catalogue of his own writings. Here his learned correspondent is named Hector Bæotius, nor has Dr Jortin subjoined his more common appellation. (*Life of Erasmus*, vol. ii. p. 725.)

² In Orem's *Description of King's College, Aberdeen*, p. 154-7, he is erroneously called William Gray.

³ Boyce has mentioned his brother in very favourable terms: "Arthurus Boetius, mihi germanus, in pontificio jure doctor, in civico (ut dicunt) licentiat, vir multæ doctrinæ, plus literarum indies consecutus, quod studium ei permanet animo indefesso, nobiscum jura pie et scite profitetur. Est in eo vis et gravitas eloquendi, a vulgari genere plurimum abhorrens. (*Abandonatum Episcoporum Vitæ*, p. 63. edit. Edinb. 1825, 4to.)

very dazzling to modern eyes. "Boethius, as president of the university," says Dr Johnson, "enjoyed a revenue of forty Scottish marks, about two pounds four shillings and sixpence of sterling money. In the present age of trade and taxes, it is difficult even for the imagination so to raise the value of money, or so to diminish the demands of life, as to suppose four and forty shillings a year an honourable stipend; yet it was probably equal, not only to the needs, but to the rank of Boethius. The wealth of England was undoubtedly to that of Scotland more than five to one, and it is known that Henry the Eighth, among whose faults avarice was never reckoned, granted to Roger Ascham, as a reward of his learning, a pension of ten pounds a year." But it is necessary to recollect that this was not the only preferment which Boyce enjoyed: he was not only principal of King's College, but was likewise a canon of Aberdeen, and rector of Tyrie in the same county. Under the date of July 14, 1527, we find a "grant to Maister Hector" of an annual pension of fifty pounds, to be paid by the sheriff of Aberdeen out of the king's casualties. And on the 26th of July 1529 was issued a "precept for a lettre to Mr Hector Boys, professor of theology, of a pension of L.50 Scots yearly, until the king promote him to a benefice of 100 marks Scots of yearly value; the said pension to be paid him by the customers of Aberdeen." In 1533 and 1534, one half of his pension was however paid by the king's treasurer, and the other half by the comptroller; and as no payment subsequent to that of Whitsuntide 1534 has been traced in the treasurer's accounts, he is supposed to have obtained his benefice soon after that period.²

His earliest publication, the lives of the bishops of Aberdeen, appeared under the subsequent title: "*Episcoporum Murthlacensium et Aberdonensium per Hectorem Boetium Vitæ.*" *Impressa sunt hæc prelo Ascensiano, ad Idus Maias anno Salutis M.D.XXII.* 4to. This little volume, which is of great rarity, was lately reprinted, for the members of the Bannatyne Club. "*Hectoris Boetii Murthlacensium et Aberdonensium Episcoporum Vitæ, iterum in lucem editæ.*" Edinb. 1825, 4to. Of the bishops of this diocese the seat was originally at Murthlack, in the county of Banff, but it was afterwards transferred to Aberdeen. His notices of the early prelates are necessarily brief and unsatisfactory, and the most interesting portion of the book is that which relates to his liberal patron Bishop Elphinstone; of whose private history and public services he has given a circumstantial detail, which occupies nearly one third of the volume. Here we likewise find an account of the foundation and constitution of the college, together with some notices of its earliest members.

His more famous work, the history of Scotland, was published after an interval of five years: "*Scotorum Historiæ a prima gentis origine, cum aliarum et rerum et gentium illustratione non vulgari: præmissa epistola nuncu-*

patoria, tabellisque amplissimis, et non pœnitenda Isagoge, quæ ab hujus tergo explicabatur diffusius. Quæ omnia impressa quidem sunt Iodoci Badii Ascensii typis et opera; impensis autem nobilis et prædocti viri Hectoris Boethii Deidonani, a quo sunt et condita et edita." Fol. The title and colophon have no date, but the commendatory epistle by Alexander Lyon, precentor of the cathedral of Elgin, bears the fifteenth of March 1527. This edition contains seventeen books. Another edition, containing the eighteenth book and a fragment of the nineteenth, was published by Ferrerius, who has added an appendix of thirty-five pages.³ Paris. 1574, fol. Though published at Paris, the latter edition appears from the colophon to have been printed at Lausanne.

The composition of Boyce's history displays much talent; and if the style does not always reach the standard of ancient purity, it displays a certain vein of elegance, which generally renders it attractive. The author's love of his native country, and his anxiety to emblazon the heroic deeds of his countrymen, are conspicuous in every part of the work; nor must we leave unnoticed those aspirations after political freedom, by which he was honourably distinguished at a period when the human mind was so generally chained to the earth by the most slavish maxims of submission. It may be recorded as commendation, instead of reproach, that his principles of polity have been represented as no better than those of Buchanan. Boyce's imagination was however stronger than his judgment: of the extent of the historian's credulity, his narrative exhibits many unequivocal proofs; and if this circumstance admits of a sufficient excuse from the common propensity of the age in which he lived, his work presents strong indications of another fault, for which it is not so easy to find an apology. According to Bishop Lloyd, he put Fordun's tales "into the form of an history, and pieced them out with a very good invention, that part in which he chiefly excelled."⁴ He professes to have obtained from the monastery of Icolmkill, through the good offices of the earl of Argyle and his brother the treasurer, certain original historians of Scotland, and among the rest Veremundus and Campbell, of whose writings not a single vestige is now to be found. In his dedication to the king, he is pleased to state that Veremundus, a Spaniard by birth, was archdeacon of St Andrews, and that he wrote in Latin a history of Scotland from the origin of the nation to the reign of Malcolm the Third, to whom he inscribed his work. According to Bishop Stillingfleet, whose opinion has been adopted by many other writers, these historians never existed except in Boyce's fertile imagination.⁵ From the charge of downright fabrication he has very recently been vindicated by Mr Maitland; but notwithstanding the ingenuity of the defence, we find it extremely difficult to divest ourselves of a strong impression, that the historian's account of his original materials, if not destitute of truth, is at least destitute of verisimilitude. His propensity to

¹ Johnson's *Journey to the Western Islands of Scotland*, p. 29. Lond. 1775, 8vo.

² Maitland's *Biographical Introduction to Bellenden*, p. xxiii.

³ Joannes Ferrerius, a native of Piedmont, resided for several years in Scotland under the patronage of Robert Reid, abbot of Kinloss, and afterwards bishop of Orkney. In the dedication of one of his works to this prelate, he mentions Hector and Arthur Boyce, together with several other scholars of Aberdeen. "*Aberdoniis rector a Kynkell, homo studiosus et politicus, me semper complexus est humanissime. Idem fecit Hector ille Boethius, historiarum vestrarum scriptor nunquam satis laudatus; ut interim omittam Arthurum Boethii fratrem germanum, utriusque juris peritissimum, Gulielmum Haye, theologum syncerum, ac Jacobum Vane, cum doctore medico peritissimo Roberto Gray. Adde his Joannem Vaus, virum cum literis tum moribus ornatissimum, et de juventute Scotica bene meritum.*" (*Auditum Visu præstare, contra vulgatum Aristotelis Placitum, academica Johannis Ferrerii Pædemoniani Dissertatio.* Paris. 1530, 4to.) With respect to his literary character, see Lord Hailes's *Examination of some of the Arguments for the high Antiquity of Regiam Majestatem*, p. 20. Edinb. 1769, 4to. Among various other works, he wrote a history of the abbots of Kinloss, which is printed, though not without abbreviation, in Martene and Durand's *Veterum Scriptorum et Monumentorum Collectio*, tom. vi.

⁴ Lloyd's *Historical Account of Church Government in Great Britain and Ireland*, pref.

⁵ Stillingfleet's *Antiquities of the British Churches*, p. 255.

Boyce. the marvellous¹ was at an early period exposed in the following tetrastich of Leland, which Dempster has erroneously ascribed to Humphrey Lhuyd:²

Hectoris historici tot quot mendacia scripsit,
Si vis ut numerem, lector amice, tibi,
Me jubeas etiam fluctus numerare marinos,
Et liquidi stellas connumerare poli.³

Lhuyd, who attacked him in different works, spoke of his fabrications without management or scruple;⁴ nor did he experience much better treatment from Stanihurst, an Irish writer of considerable reputation.⁵ Of his merits as an historian, a very unfavourable estimate has more recently been formed by Lord Hailes and Mr Pinkerton. But, in the opinion of Mr Wallace, a learned lawyer, his "elegant style and correct composition, not to add beautiful genius and fine fancy, are conclusive proofs that his understanding could not be inaccurate."⁶ And, as Mr Maitland has remarked, "in forming a final estimate of the literary character of Boece, we must bear in mind, that when scholar-craft, in this country at least, was rare, he was a scholar, and contributed, by reviving ancient learning, to dispel the gloom of the middle ages; and that, while the history of his country existed only in the rude page of the chroniclers who preceded him, or in the fading records of oral tradition, he embodied it in narrative so interesting, and language so beautiful, as to be worthy of a more refined age."⁷

Boyce's history of Scotland was translated into the Scottish language by John Bellenden, archdeacon of Moray and canon of Ross, of whom we have already presented our readers with a copious notice. While the learned archdeacon was engaged in translating the work into prose, another individual was engaged in the more formidable task of translating it into verse. A copy of this metrical version, containing about 70,000 lines, is preserved in the library of the university of Cambridge: a leaf seems to be wanting at the beginning, and the manuscript has suffered some other mutilations. The name of the versifier does not appear, nor has it been ascertained from any other document; but we learn from the prologue, that his labours, like those of Bellenden, were intended for the benefit of the young monarch. From the concluding lines, it is ascertained that he began his task in April 1531, and concluded it in September 1535. His verses are not distinguished by any considerable degree of energy or elegance, and the writer is chiefly to be commended for his perseverance. The prologue, which is unfortunately mutilated, contains an account of his motives for engaging in this laborious undertaking: it is conducted in the form of a dialogue between the translator and a certain lady, who is probably some allegorical personage. The following is perhaps the most curious passage which it contains.

Bot yit, scho said, I dreid in my intent
That to his grace it be ovir eloquent;
For quhy the termis poleist ar perfyte
Of eloquence, in rycht plesand indyte,
In Latene toung sententiouslie and schort,
Quhilk for to heir is plesand and confort.
Madame, I said, quha wes it drew that storie?
Ane man, scho said, of sic hie laud and glorie,
In Albione sen stories wes begun,
Wes nevir nane sic amang our poetis fun.
Madame, I said, quhat is that manniss name?
Ane Hector Boyis, said scho, of nobill fame,
Maister in art, doctor in theologie,
In all science ane profound clerk is he.
Madame, I said, now tell me or ye ga,
Quhat is the caus that ye commend it sua.
That sall I do, quoth scho, and yow wald heir.
Our old storeis befor thir mony yeir,
Tha war distroyit all with Inglismen
In Wallace weir, as it is eith to ken:
Syne efterwart quhen that tha wreit the storie,
Ald eldaris deidis to put into memorie,
Tha maid tha bukis, thair tractatis, and thair tabilis,
Part be ges, and part be fenzeit fabillis,
Part tha fand in ald bladis of bukis,
Part in lous quairis, liand wer in nukis:
Tha tuke sic cuir sic thingis to consider,
Syne in ane volume pat thame altogidder,
Without ordour, fassoun, or effect;
Mikill wantit, and all the lave suspect.
Madame, said I, now gar me vnderstand
Into quhat place that he tha stories fand.
That sall I do, than said scho, with gud will.
Intill ane place callit Ecolumkill,
Ane abbai sumtyme of authoritie,
In Iona yle, within the occident se,
Quhilk oft syis had of kingis corps the cuir;
Lang of the ald thair wes thair sepultuir:
And thair wes keptit thair storeis and bukis,
As in this libell yow sall se quhen yow luikis:
And in that place thair wes thair stories fand,
Sum in lous quairis, and uther sum weill band,
As Beid, Turgot, and Weremund alsua,
Corneill Campbell, and mony uther ma,
All tell and fynd ane fassoun and effect,⁸
In ornat spech, and nothing to suspect.
And for this caus I haif socht to ye heir:
Hartlie as now thair of, I ye requier,
Translait this libell in our mother toung,
And preis ye nocht my purpois to impugn.
The kingis grace I know is nocht perfyte
In Latyn toung, and namellie in sic dyte;
It wil be tedious, that dar I tak on hand,
To reid the thing he can not vnderstand:
War it translaid in our vulgar toung,
Out throw that realme the rumor [ould be roun].

In the year 1528, soon after the publication of his history, Boyce took the degree of D. D. at Aberdeen; and on this occasion the magistrates voted him a present of a tun of wine when the new wines should arrive, or, according

¹ One of the letters of Joseph Scaliger contains the subsequent passage relative to Boyce's story of the barnacles, or soland-geese: "Nam de conchis anatifera fabula prorsus est. Nullae enim anates ex conchis producuntur, sed ex putredine vetustorum navigiorum, quibus conchae adherent, anates quasdam nasci certum est. Etiam arbores anatiferas esse in ultima Scotia, ubi nullae prorsus arbores sunt, hactenus mentita est scriptorum vernilitas." (Scaligeri *Epistola*, p. 729. Lugd. Bat. 1627, 8vo.) See likewise Nicolai Nancelii *Analogia Microcosmi ad Macrocosmon*, col. 835. Lutetiae Paris. 1611, fol. It is just as easy to believe that birds grow upon trees as that they are produced from rotten wood; so that the philosophy of Scaliger seems to have conducted him but a little way beyond the region of absolute credulity.

² Dempsteri *Historia Ecclesiastica Gentis Scotorum*, p. 98. Bononiae, 1627, 4to.

³ Lelandi *de Rebus Britannicis Collectanea*, vol. v. p. 126.

⁴ "Ut hominem impurissimum suis depingam coloribus," says Lhuyd, "fucusque et praestigia quibus omnium oculis perstringere conatur, aperiantur, aliquas ejus vanissimas nugae, et omnibus cordatis pro mendaciis cognitae, leviter attingamus." (*Commentarii Britannicae Descriptionis Fragmentum*, f. 32, a. Col. Agrip. 1572, 8vo.) In another work, *De Mona Druidum Insula*, *Epistola*, he speaks in a similar strain: "Ut Hectoris Boethii innumera mendacia hinc facilius dignoscantur."

⁵ Stanihursti *de Robus in Hibernia gestis libri quattuor*, p. 18. Antverpiae, 1584, 4to.

⁶ Wallace's *Nature and Descent of Ancient Pcerages*, p. 451. edit. Edinb. 1785, 8vo.

⁷ *Biographical Introduction to Mr Maitland's edition of Bellenden's Translation*, p. xxxv.

⁸ This line, which is scarcely intelligible, ought perhaps to have stood thus:

All hail and fyne in fassoun and effect.

to his option, the sum of twenty pounds to purchase a new bonnet.¹ He appears to have survived till the year 1536; for on the 22d of November in that year, the king presented John Garden to the rectory of Tyrie, vacant by the death of "Mr Hector Boiss." He died at Aberdeen, and, according to the most probable conjecture, he had then attained or at least approached the age of seventy. (x.)

BOYD, MARK ALEXANDER, a younger son of Robert Boyd of Pinkill in Ayrshire, was born on the 13th of January 1562. He is said to have come into the world provided with a couple of teeth. He learned the rudiments of the Latin and Greek languages at Glasgow under two grammarians, but was of so high and untractable a spirit, that they despaired of ever making him a scholar. Having quarrelled with his masters, he beat them both, burnt his books, and forswore learning. His uncle, James Boyd of Trochrig, was at that time archbishop of Glasgow; and, as he soon lost his father, his academical studies were conducted under the superintendence of this relation. After he entered the university, he was engaged in some very riotous proceedings, which have been particularly detailed by the able biographer of Melville. While he was yet a youth he followed the court, and exerted the usual means of obtaining preferment; but the fervour of his temper soon precipitated him into quarrels, from which he came off with honour and safety, though frequently at the hazard of his life. As he was nearly related to Lord Boyd, it is probable that he relied chiefly on his patronage; but, as Lord Hailes remarks, "all that we learn of his proficiency at court is, that he fought one duel, and was engaged in numberless broils." With the approbation of his friends, he went to serve in the French army, and carried with him his little patrimony, which he soon dissipated at play. He was shortly after roused by that emulation which is natural to superior minds, and applied himself to letters with unremitted ardour, till he attained to no mean proficiency as a scholar. Leaving his native country in 1581, when only in his twentieth year, he was not yet past the age of academical study; and he attended the lectures of several professors in the university of Paris, particularly those of Passerat, professor of eloquence, and of Genebrand, professor of Hebrew. Having next directed his attention to the civil law, he went to Orleans, and became a pupil of J. Robert, "a man principally known for having dared to become the antagonist of Cujacius." But from the university of Orleans he speedily removed to that of Bourges, where he is said to have obtained the friendship of Cujacius, by writing some verses in obsolete Latin; and, as one of his biographers has suggested, that learned man could not fail to relish verses which approached the standard of the twelve Tables.

The plague having driven him from Bourges, he sought a place of refuge at Lyon; and, when the infection extended to that city, he retired into Italy, where he contracted a friendship with a person whom he names Cornelius Varus. Having been seized with an ague, he returned to Lyon to try the effect of change of air; and the only regret which he felt in quitting Italy, is said to have arisen from his being thus deprived of the literary conversation and salutary advice of his friend. It was about the year 1585 that he revisited France. In 1587 he served with the royal forces opposed to the mercenary army of Germans and Swiss, which had invaded that country to support the king of Navarre. He served under an officer of cavalry, who was a Greek by birth; and,

during this campaign, he was wounded by a shot in the ankle. In 1588 he took up his abode in Toulouse, and applied himself to the study of the civil law under Roaldes, a professor of eminence. About the same period he appears to have written several tracts on the science of jurisprudence, and even to have projected a systematical work on the law of nature and nations. But his studies met with an unforeseen interruption, in consequence of the tumults which ensued at Toulouse, and during which the first president Duranty, the advocate-general Dafis, and other individuals of inferior quality, were murdered by the inhabitants. During this season of outrage Boyd was thrown into prison; and, as innocence afforded him no security, he was exposed to imminent danger of his life; but he owed his deliverance to the intercession of some of his friends. He now retired to Rochelle; but as the climate did not agree with his constitution, he afterwards fixed his residence at Fontenay in Poitou. In this retreat he devoted much of his time to study, and occasionally resumed the avocation of a soldier, for which he retained a violent propensity. He is reported to have acted as preceptor to a young French gentleman of the reformed religion, but of such an engagement his own writings communicate no information. About the year 1591 he appears to have formed a design of reading lectures on the civil law; and the heads of his prelections on the Institutes of Justinian are still preserved among his other papers in the Advocates Library.

His friends in Scotland, and among others Patrick Sharpe, under whom he had studied in the university of Glasgow, urged him to return to his native country; but, according to his own account, the state of his health had long obliged him to live obscurely in France, and his scanty circumstances would not allow him to make a tolerable figure in Scotland. He endeavoured however to strengthen his interest in his native land, by dedicating to James the Sixth a collection of his poems and epistles, printed at Antwerp, 1592, in 12mo. Three years afterwards, while preparing to return home, he received intelligence of the death of his elder brother William, for whom he apparently cherished a very sincere affection. Of his subsequent history, few particulars have been recorded. We are however informed that he at length returned to Scotland; and, after a short residence having undertaken to accompany the earl of Cassilis in his travels, he completed this engagement, and once more revisited his native country, where he died of a slow fever, on the 10th of April 1601. At the time of his death he was only in the fortieth year of his age.

Boyd appears to have been a person of a restless and turbulent disposition; and, as he added courage to strength, his sword must at least have been as formidable as his pen. He was tall, robust, and well-proportioned, and, possessing a handsome and pleasing countenance, he had much of the gallant bearing of a soldier. His literary vanity was not the least conspicuous part of his character. He was however a man of genius; and if his disposition and circumstances had been more favourable for persevering and systematical exertion, he might have secured a high reputation among the scholars of the age.²

BOYER, ABEL, a well-known glossographer and historiographer, born at Castres in France in 1664. Upon the revocation of the edict of Nantes, he went first to Geneva, then to Franeker, where he finished his studies, and finally came to England, where he applied himself so as-

¹ Kennedy's *Annals of Aberdeen*, vol. ii. p. 367.

² Hailes's *Sketch of the Life of Mark Alexander Boyd*, 4to. M'Crie's *Life of Melville*, vol. i. p. 85.—Boyd's Latin poems occur in the *Deliciae Poetarum Scotorum*, tom. i. p. 142.

Boyer
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Boyle.

siduously to the study of the English language, and made so great a proficiency therein, that he became an author of considerable note, and was employed in writing several periodical and political works. He was for many years concerned in a newspaper called the *Post-boy*, of which he had the principal management. He likewise published a monthly work entitled the *Political State of Great Britain*. He wrote a life of Queen Anne in folio, which is esteemed a very good chronicle of that period of the English history. But he is best known by a Dictionary and Grammar of the French language, which he compiled, and which are still reckoned good in their kind. He also wrote, or rather translated from the French of M. de Racine, the tragedy of Iphigenia, which he published under the title of *The Victim*. It was performed with success at Drury-Lane, and is very far from being a bad play. He died at Chelsea in 1729.

BOYER, in *Navigation*, a kind of Flemish sloop, or small vessel of burden, having a boltsprit, a castle at each end, and a tall mast, chiefly fitted for the navigation of rivers, and in many of its parts resembling a smack.

BOYLE, RICHARD, one of the greatest statesmen of the seventeenth century, and generally styled the Great Earl of Cork, was the youngest son of Mr Roger Boyle, and born at Canterbury on the 3d of October 1566. He studied at Bennet College, Cambridge, and afterwards became a student in the Middle Temple. Having lost his father and mother, and being unable to support himself in the prosecution of his studies, he became clerk to Sir Richard Manhood, one of the barons of exchequer; but finding that by his employment he could not improve his fortune, he went to Ireland in 1588 with fewer pounds in his pocket than he afterwards acquired thousands a year. He was then about twenty-two years of age, with a graceful person and many accomplishments, which enabled him to render himself useful to some of the principal persons employed in the government, by drawing up for them memorials, cases, and answers. In 1595 he married Jean, the daughter and co-heiress of William Ansley, who had fallen in love with him; and she, dying in 1599, left him an estate of £500 a year in land. In consequence of various services, and the great ability he displayed, he gradually rose to the highest offices, and even to the dignity of the peerage of Ireland, to which he was raised by King James I. on the 29th of September 1616, by the style and title of Baron of Youghall, in the county of Cork; four years after he was created Viscount Dungarvan and Earl of Cork; and in 1631 he was appointed lord-treasurer of Ireland, an honour that was made hereditary to his family. He particularly distinguished himself by the noble stand he made when the fatal rebellion broke out in Ireland in the reign of Charles I.; and in his old age he acted with as much bravery and military skill as if he had been trained from his infancy to the profession of arms. Having turned the castle of Lismore, his principal seat, into a fortress capable of demanding respect from the Irish, he immediately armed and disciplined his servants and Protestant tenants; and, with their assistance, and a small army raised and maintained at his own expense, which he put under the command of his four sons, he defended the province of Munster, took several strong castles, and killed upwards of three thousand of the enemy. During this time he paid his forces regularly; and when all his money was exhausted, he, like a true patriot, converted his plate into coin. He died on the 15th of September 1634.

BOYLE, Richard, Earl of Burlington and Cork, son of the former, was a nobleman of unblemished loyalty in troubled times, and of untainted integrity in a period of the greatest corruption. He was born at Youghall in October 1612, while his father was in the beginning of

his career, being then only Sir Richard Boyle; and he distinguished himself by his loyalty to King Charles I. He not only commanded troops, but raised, and, for a long time, paid them, continuing to wait upon the king as long as any place held out for him in England; and it was only in the last extremity he was forced to compound for his estate. He contributed all in his power to the Restoration; on which King Charles II. raised him to the dignity of Earl of Burlington or Bridlington, in the county of York, in the year 1663. He died in January 1697-8, in the eighty-sixth year of his age.

BOYLE, Roger, Earl of Orrery, younger brother of the former, and the fifth son of Richard, styled the Great Earl of Cork, was born in April 1621, and, by the credit of his father with the lord-deputy Falkland, was raised to the dignity and title of Baron Broghill when only seven years of age. He was educated at the college of Dublin, where he soon distinguished himself as an early and promising genius. He afterwards made the tour of France and Italy, and on his return assisted his father in opposing the rebellious Irish. Upon the execution of the king, he retired to Marston in Somersetshire, and buried himself in the privacy of a close retirement; but being at length ashamed to remain a tame spectator of what was passing around him, he resolved to attempt something in favour of the king; and under the pretence of going to the Spa for the recovery of his health, he determined to cross the seas and apply himself to King Charles II. for a commission to raise what forces he could in Ireland, in order to restore his majesty, and recover his own estate. For this purpose he prevailed on the Earl of Warwick to procure a license for his going to the Spa, and having raised a considerable sum of money, came up to London to prosecute his voyage. But he had not been long in town when he received a message from Cromwell, who was then general of the parliament's forces, intimating that he intended to wait upon him. The Lord Broghill was surprised at this message, having never had the least acquaintance with Cromwell; and desired the gentleman who brought it to let the general know that he would wait upon his excellency. But while he was waiting the return of the messenger, Cromwell entered the room, and after an exchange of civilities, told him in a few words that the committee of state were apprised of his design of going over and applying to Charles Stuart for a commission to raise forces in Ireland, and that they were determined to make an example of him, if he himself had not diverted them from that resolution. The Lord Broghill interrupted him by assuring him that the intelligence which the committee had received was false, and that he neither was in a capacity nor had any inclination to raise disturbances in Ireland; but Cromwell, instead of making any reply, drew some papers out of his pocket, being the copies of several letters which the Lord Broghill had sent to those persons in whom he most confided, and put them into his hands. Lord Broghill, upon the perusal of these papers, finding it to no purpose to dissemble any longer, asked his excellency's pardon for what he had said; returned him his humble thanks for his protection against the committee; and entreated his direction how to behave in such a delicate conjuncture. Cromwell told him, that though, till this time, he had been a stranger to his person, he was not so to his merit and character; he had heard how gallantly his lordship had behaved in the Irish wars; and therefore, since he was named lord-lieutenant of Ireland, and the reducing of that kingdom had now become his province, he had obtained leave of the committee to offer his lordship the command of a general officer if he would serve in that war; adding, that he should have no oaths or engagements imposed upon him, nor

be obliged to draw his sword against any but the Irish rebels.

Lord Broghill was infinitely surprised at so generous and unexpected an offer. He saw himself at liberty, by all the rules of honour, to serve against the rebellious Irish, whose barbarities were equally detested by the royal party and by the parliament. He desired, however, some time to consider of what had been proposed to him. But Cromwell briskly told him, that he must come to some resolution that very instant; that he himself was about to return to the committee, who were still sitting; and that if his lordship rejected their offer, they had determined to send him to the Tower. Upon this Lord Broghill, finding that his liberty and life were in the utmost danger, gave his word and honour that he would faithfully serve against the Irish rebels; upon which Cromwell once more assured him, that the conditions which he had made with him should be punctually observed, and then ordered him to repair to Bristol; adding, that he himself would soon follow him into Ireland. Lord Broghill, therefore, went over into that country, where, by his conduct and intrepidity, he performed many important services, and fully justified the opinion which Cromwell had conceived of him. By his own interest he raised a gallant troop of horse, which was soon increased to a regiment of 1500 men; and these he led into the field against the Irish rebels. He was speedily joined by Cromwell, who placed the highest confidence in his new ally, and found him of the greatest consequence to the interest of the commonwealth.

When Cromwell became Protector, he sent for Lord Broghill occasionally to take his advice. And we are told, that the latter, not long after his coming to England, formed a project for engaging Cromwell to restore the old constitution. The basis of the scheme was to be a match between the king, Charles II., and the Protector's daughter. As his lordship maintained a secret correspondence with the exiled monarch and his friends, it was imagined that he was beforehand pretty sure that Charles was not averse to the scheme, or he would not have ventured to propose it seriously to Cromwell, who at first seemed to think it not unfeasible. But the Protector soon changed his mind, and told Broghill that he thought his project impracticable: "For," said he, "Charles can never forgive me the death of his father." In fine, the business came to nothing, although his lordship had engaged Cromwell's wife and daughter in the scheme; but he never durst let the Protector know that he had previously treated with Charles about it.

On the death of the Protector, Lord Broghill continued attached to his son Richard, till, seeing that the honesty and good-nature of that worthy man would infallibly render him a prey to his enemies, he did not think it advisable to sink with a man whom he could not save. The dark clouds of anarchy seemed now to be gathering over the British island. Lord Broghill saw the storm preparing, and deemed it prudent to retire to his command in Ireland, where, shortly after, things took a turn extremely favourable to the design of the king's restoration. In this great event Lord Broghill was not a little instrumental; and, in consideration of his eminent services, Charles created him Earl of Orrery by letters-patent bearing date the 5th September 1660. He was soon after made one of the lords justices of Ireland; and his conduct, whilst at the head of affairs in that kingdom, was such as to add greatly to the general esteem in which his character was previously held.

His lordship's active and toilsome course of life at length brought on disease and infirmity; but notwithstanding these, on the king's desiring to see his lordship, he went over to England in 1665. He found the court

in some disorder, and his majesty on the point of removing the great Earl of Clarendon, lord high chancellor; and there also existed a misunderstanding between the royal brothers. Lord Orrery undertook to reconcile the king with the Duke of York; and this he effected by prevailing on the latter to ask his majesty's pardon for some steps which he had taken in support of the Lord Chancellor.

On his return to Ireland Lord Orrery found himself called to a new scene of action. The Dutch war was then at its height; and the French, in confederacy with the Hollanders, were endeavouring to stir up the ashes of rebellion in Ireland. The Duke de Beaufort, admiral of France, had formed a scheme for a descent upon Ireland; but this was rendered abortive by the extraordinary diligence, military skill, and prudent measures of Lord Orrery.

In midst of all his labours, a dispute, founded on mutual jealousy, arose betwixt him and his old friend the Duke of Ormond, then lord lieutenant; but the bad effects of it were soon felt by both disputants, who resorted to England to defend their respective interests and pretensions, and were attacked by secret enemies, who suggested many things to their prejudice. This quarrel, though of a private beginning, became at last of a public nature; and producing, first, an attempt to frame an impeachment against the Duke of Ormond, occasioned in the end, by way of revenge, an actual impeachment against the Earl of Orrery. But the latter defended himself so well against the charge of high crimes, and even of treason itself, that the prosecution came to nothing. He nevertheless lost his public employments; but retaining the king's favour, he still came frequently to court, and sometimes to council. After this revolution in his affairs, he made several voyages to and from Ireland, was often consulted by his majesty on affairs of the utmost consequence, and, on all occasions, gave his opinion and advice with the freedom of an honest plain-dealing man and a sincere friend.

In 1678, being attacked more cruelly than ever by his old enemy, the gout, he made his last voyage to England for medical advice. But his disorder was beyond the power of medicine; and having, in his last illness, given the strongest proofs of Christian patience, manly courage, and rational fortitude, he breathed his last on the 16th of October 1679, in the fifty-ninth year of his age. His lordship wrote, 1. A work entitled *The Art of War*; 2. *Parthenissa*, a romance, in one volume folio; 3. Several poems; 4. Dramatic pieces, in two volumes; 5. State tracts, in one volume folio; and some other pieces. Mr Walpole, speaking of this nobleman, says, he never made a bad figure but as a poet. As a soldier, his bravery was distinguished, his stratagems were remarkable; as a statesman, it is sufficient to say that he possessed the confidence of Cromwell; as a man he was grateful, and would have supported the son of his friend; but, like Cicero and Richelieu, he could not be content without being a poet, though ill qualified to shine in this character, and though his poetical writings were flat and trivial.

BOYLE, *Robert*, one of the greatest philosophers as well as best men that our own or indeed any other nation has produced, was the seventh son and the fourteenth child of Richard Earl of Cork, and was born at Lismore in the province of Munster in Ireland, on the 25th January 1626-7. Before he went to school, he was taught to write a very fair hand, and to speak Latin and French, by one of the earl's chaplains, and a Frenchman whom his lordship kept in the house. In the year 1635 his father sent him over to England, that he might be educated at Eton school, under Sir Henry Wotton, who was the Earl of Cork's old friend and acquaintance. Here he soon

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Boyle discovered a force of understanding which promised great things, and a disposition to cultivate and improve it to the utmost. Whilst he remained at Eton, several very extraordinary accidents befel him, of which he has given us an account; and three of these were very near proving fatal to him. The first was the sudden fall of the chamber where he lodged, while he was in bed; when, besides the danger he incurred of being crushed to pieces, he had certainly been choked with the dust during the time he lay under the rubbish, if he had not had presence of mind enough to wrap up his head in the sheet, which gave him an opportunity of breathing without hazard. A little time after this he would have been crushed to death by a horse that reared suddenly, and threw himself backwards, if he had not happily disengaged his feet from the stirrups, and cast himself from the back of the animal before he fell. The third accident proceeded from the carelessness of an apothecary's servant, who, by mistaking the phials, brought him a strong emetic instead of a cooling medicine.

He remained at Eton, upon the whole, between three and four years; and then his father removed him to his own seat at Stalbridge in Dorsetshire, where he remained for some time under the care of one of the chaplains, who was the parson of the place. In 1638 he attended his father to London, and remained with him at the Savoy, till his brother Mr Francis Boyle espoused Mrs Elizabeth Killigrew; then, towards the end of October, within four days after the marriage, the two brothers, Francis and Robert, were sent abroad upon their travels, under the care of Mr Marcombes. Embarking at Rye in Sussex, they proceeded to Dieppe in Normandy, and travelled by Rouen to Paris, and thence to Lyons; from which city they continued their journey to Geneva, where their travelling companion had a family, and there pursued their studies without interruption. Mr Boyle, during his stay there, resumed his acquaintance with the mathematics, or at least with the elements of that science, of which he had before gained some knowledge.

In September 1641 he quitted Geneva, after having spent twelve months in that city, and, passing through Switzerland and the country of the Grisons, entered Lombardy; then, taking his route through Bergamo, Brescia, and Verona, he arrived at Venice, where he made a short stay, and returning to the Continent, spent the winter at Florence. Here he employed his spare hours in reading the modern history of Italy, and in studying the works of Galileo, who died in a village near this city during Mr Boyle's residence there. It was at Florence that he acquired the Italian language, which he understood perfectly, though he never spoke it so fluently as the French. Of the latter he was such a master, that, when occasion required, he passed for a native of France.

About the end of March 1642, he went from Florence to Rome, and surveyed the numerous curiosities of the Eternal City. Amongst these, he tells us, "he had the fortune to see Pope Urban VIII. at chapel, with the cardinals, who, severally appearing mighty princes, in that assembly looked like a company of common friars." He visited all the adjacent villages which had anything curious or antique belonging to them; and would probably have made a longer stay, had not the heats disagreed with his brother. He returned to Florence, thence proceeded to Leghorn, and so by sea to Genoa; then passing through the county of Nice, he crossed the sea to Antibes, and thence travelled by land to Marseilles. He was in that city in May 1642, when he received his father's letters, informing him that a rebellion had broken out in Ireland, and with what difficulty he had procured the L.250 then remitted to them in order to defray the expenses of their journey home. They never received this sum; and were

obliged to repair to Geneva with their governor Marcombes, who supplied them with as much as carried them thither. They continued there a considerable time without either advice or supplies from England; upon which Marcombes was obliged to take up, upon his own credit, some jewels, which were afterwards disposed of with as little loss as might be; and with the money thus raised they continued their journey to England, where they arrived in the year 1644. On their arrival Mr Boyle found that his father was dead; and though the earl had made ample provision for him, by leaving him the manor of Stalbridge in England, as well as other considerable estates in Ireland, yet it was some time before he could receive any money. However, he procured protections for his estates in both kingdoms from the powers then in being; and he also obtained leave to go over to France for a short space, probably to settle accounts with his governor Mr Marcombes.

In March 1646 he retired to his manor at Stalbridge, where he resided for the most part till May 1650. He made excursions sometimes to London, sometimes to Oxford; and in February 1647 he went over to Holland, but made no considerable stay anywhere. During his retirement at Stalbridge he applied himself with incredible industry to studies of various kinds, particularly to those of natural philosophy and chemistry. He omitted no opportunity of making the acquaintance of persons distinguished for parts and learning, to whom he was always a ready, useful, and generous assistant, and with whom he maintained a constant correspondence. He was also one of the first members of that small but learned body of men which, when all academical studies were interrupted by the civil wars, secreted themselves, about the year 1645, and held private meetings, first in London, and afterwards at Oxford, for the purpose of canvassing subjects of natural knowledge upon the plan of experiment which Lord Bacon had delineated. They then styled themselves the Philosophic College; and after the Restoration, when they were incorporated and openly recognised, they took the name of the Royal Society.

In the summer of 1654 Mr Boyle executed a design which he had formed for some time of residing at Oxford. Oxford was indeed the only place at that time in England where he could have lived with much satisfaction; for here he found himself surrounded with a number of learned friends, such as Wilkins, Wallis, Ward, Willis, Wren, and others, suited exactly to his taste, and who had resorted thither for the same reasons as himself. It was during his residence here that he improved the air-pump, and by numerous experiments was enabled to discover several qualities of air. He was not satisfied with what he had done, however, but laboured incessantly in collecting and digesting, chiefly from his own experiments, the materials requisite for his purpose. He declared against the philosophy of Aristotle, as having in it more words than things, as promising much and performing little, and as giving the inventions of men for indubitable proofs, instead of building upon observation and experiment. He was so zealous for the true method of learning by experiment, that though the Cartesian philosophy then made a great noise in the world, yet he could never be persuaded to read the works of Descartes, lest he should be amused and led away by plausible accounts of things founded on conjecture, and merely hypothetical. But philosophy, and inquiries into nature, though they engaged his attention deeply, did not occupy it entirely. We find, indeed, that he still continued to pursue critical and theological studies. In these he had the assistance of some great men, particularly Dr Edward Pococke, Mr Thomas Hyde, and Mr Samuel Clarke, all of great emi-

nence for their skill in the oriental languages. He had also a strict intimacy with Dr Thomas Barlow, at that time head keeper of the Bodleian library, and afterwards Bishop of Lincoln, a man of various and extensive learning. In the year 1659 Mr Boyle, becoming acquainted with the unhappy circumstances of Saunderson, afterwards bishop of Lincoln, who lost all his preferments on account of his attachment to the royal party, conferred upon him an honorary stipend of £50 a year. This was given to encourage him to apply himself to the writing of "Cases of Conscience;" and accordingly he printed his lectures *De Obligatione Conscientiæ*, which he read at Oxford in 1647, and dedicated to his friend and patron.

On the restoration of Charles II. Mr Boyle was treated with great civility and respect by the king, as well as by the Lord Treasurer Southampton, and the Lord Chancellor Clarendon. He was solicited by the latter to enter into holy orders, not only out of regard to him and his family, but chiefly with a view to serve the church itself; for Mr Boyle's noble family, his distinguished learning, and, above all, his unblemished reputation, induced Lord Clarendon to think that any ecclesiastical preferments he might attain would be worthily discharged, so as to do honour to the clergy and service to the established communion. Mr Boyle considered all this with due attention; but he also reflected, that, in the situation of life which he then occupied, whatever he wrote with respect to religion would have much greater weight as coming from a layman; that, in point of fortune, he needed no accessions, and indeed never had any appetite for such; and that, by taking orders, he would neither enhance his character nor enlarge the sphere of his usefulness, but rather the reverse. He chose, therefore, to pursue his philosophical studies in such a manner as might conduce to the support of religion, and began to communicate to the world the fruits of these studies.

The first of these were printed at Oxford in 1660, in 8vo, under the title of *New Experiments, Physico-mechanical, touching the Spring of the Air and its Effects; and Seraphic Love, or some Motives and Incentives to the Love of God*, pathetically discoursed of in a letter to a friend. Certain physiological essays and other tracts, in 4to, appeared in 1661; and the *Sceptical Chemist*, in 1662, but it was reprinted about the year 1679, in 8vo, with the addition of divers experiments and notes.

In the year 1663, the Royal Society having been incorporated by King Charles II., Mr Boyle was appointed one of the council; and as he might be justly reckoned among the founders of that learned body, so he continued one of the most useful and industrious of its members during the whole course of his life. In June 1663 he published *Considerations touching the usefulness of Experimental Natural Philosophy*, 4to, and *Experiments and Considerations upon Colours*; to which was added, a Letter, containing *Observations on a Diamond that shines in the Dark*, 8vo. This treatise, which is full of curious and useful remarks on the hitherto unexplained doctrine of light and colours, shows great judgment, accuracy, and penetration; and it may be said to have led the way to that more full and ample development of the subject which was reserved for the mighty genius of Sir Isaac Newton. *Considerations on the style of the Holy Scriptures*, in octavo, also appeared in 1663, and was an extract from a larger work, entitled *An Essay on Scripture*, which was afterwards published by Sir Peter Pett, a friend of Mr Boyle's.

In 1664 he was elected into the company of the royal mines, and all this year he was engaged in the prosecution of various good designs, which prevented his sending abroad any treatises either of religion or philosophy. The year following came forth *Occasional Reflections upon se-*

veral Subjects, 1665, 8vo. This piece is addressed to *Sophronia*, under which name he concealed that of his sister the Viscountess of Ranelagh, and it exposed him to the only severe censure that ever was passed upon him. In order to ridicule these discourses, Dean Swift wrote *A Pious Meditation upon a Broomstick, in the style of the Honourable Mr Boyle*. But, as his noble relative Lord Orrery observed, "To what a height must the spirit of sarcasm arise in an author, who could prevail on himself to ridicule so good a man as Mr Boyle? The sword of wit, like the scythe of time, cuts down friend and foe, and attacks every object that lies in its way. But, sharp and irresistible as the edge of it may be, Mr Boyle will always remain invulnerable."

The same year he published an important work, entitled *New Experiments and Observations upon Cold*, 1665, 8vo. In the year 1666 he published *Hydrostatical Paradoxes* made out by new Experiments, for the most part physical and easy, in 8vo; and also the *Origin of Forms and Qualities*, according to the *Corpuscular Philosophy*, illustrated by considerations and experiments. This last treatise did great honour to Mr Boyle, whether we consider the quickness of his wit, the depth of his judgment, or his indefatigable pains in searching after truth. But we must not forget to observe, that, both in this and the former year, he communicated to Mr Oldenburg, secretary to the Royal Society, several curious and excellent short treatises of his own, and others transmitted to him by his learned friends both at home and abroad, which are printed and preserved in the *Philosophical Transactions*.

In the year 1668, Mr Boyle, having resolved to settle in London for life, removed for that purpose to the house of his sister, the Lady Ranelagh, in Pall-Mall. This proved beneficial to the learned in general, and particularly to the Royal Society, to whom he gave great and continual assistance, as the several pieces communicated to them, and printed in their *Transactions*, abundantly testify. Those who applied to him, either to desire his help or to communicate any new discoveries in science, he had fixed hours for receiving; and, besides, he carried on an extensive correspondence with persons of learning in all parts of Europe. In the year 1669 he published *A Continuation of New Experiments, touching the Weight and Spring of the Air*; to which is added, *A Discourse of the Atmospheres of Consistent Bodies*: and the same year he revised and made many additions to several of his former tracts, some of which were now translated into Latin, in order to gratify the curious abroad. He also gave to the world, at this time, *Tracts about the Cosmical Qualities of Things, the Temperature of the Subterraneous Regions, and the Bottom of the Sea*; to which is prefixed, an *Introduction to the History of Particular Qualities*. This book occasioned much speculation, as it seemed to contain a vast treasure of knowledge which had never before been communicated to the world, and which, too, was grounded upon actual experiments, or arguments justly drawn from them, instead of that notional and conjectural philosophy which in the beginning of the seventeenth century had been so much in fashion.

In the year 1671 he published *Considerations on the Usefulness of Experimental and Natural Philosophy* (part second), 4to; and, *A Collection of Tracts upon several useful and important points of Practical Philosophy*, 4to; both of which works were received as new and valuable gifts to the learned world. An essay concerning the *Origin and Virtues of Gems*, 8vo, appeared in 1672; also, *A collection of tracts upon the relation between flame and air, and several other useful and curious subjects*; besides which he furnished, in this and the former year, a great number of short dissertations upon a variety of topics, addressed to

Boyle. the Royal Society, and inserted in their Transactions. Essays on the strange Subtlety, great Efficacy, and determinate Nature of Effluvia, to which were added a variety of Experiments on other Subjects, came out in 1673, 8vo. A collection of tracts upon the saltness of the sea, the moisture of the air, the natural and preternatural state of bodies, to which is prefixed a dialogue concerning cold, was published in 1674, 8vo. The excellency of theology, compared with philosophy, appeared in 1673. This discourse was written in the year 1665, while Mr Boyle, to avoid the great plague which then raged in London, was forced to wander from place to place in the country, and had little or no opportunity of consulting books. It contains a great number of curious and useful, as well as just and natural observations. A collection of tracts containing suspicions respecting hidden qualities of the air, with an appendix touching celestial magnets, animadversions upon Mr Hobbes's problem about a vacuum, and a discourse of the cause of attraction and suction, was published in 1674; and some considerations about the reconcileableness of reason and religion, by a layman; to which is annexed a discourse about the possibility of the resurrection, appeared in 1655. Both these pieces were of his composition; but he thought fit to mark the former with the final letters of his name. Amongst the papers which he communicated to the Royal Society this year, were two connected into one discourse; the one entitled An experimental discourse of quicksilver growing hot with gold; the other relating to the same subject; and both of them containing discoveries of the utmost importance.

In the year 1676 he published Experiments and Notes about the mechanical origin or production of particular qualities, in several discourses on a great variety of subjects, and, among the rest, on electricity. In 1678 he communicated to Mr Hooke a short memorial of some observations made upon an artificial substance that shines without any preceding illustration; which that gentleman thought fit to publish in his *Lectiones Cutlerianæ*. His historical account of a degradation of gold produced by an anti-elixir, made a great noise both at home and abroad, and is looked upon as one of the most remarkable pieces that ever fell from his pen; since the facts contained in it would have been esteemed incredible, if they had been related by a man of less integrity and piety than Mr Boyle. The regard which Newton had for Mr Boyle appears from a letter which the former wrote to him, towards the close of this year, stating his sentiments of that ethereal medium which he afterwards considered in his *Optics* as the cause of gravitation. This letter is to be found in the life of Mr Boyle by Dr Birch.

In the year 1680, Mr Boyle published the Aerial Noctiluca, or some new phenomena, and a process of a factitious self-shining substance, 8vo. This year the Royal Society, as a proof of their sense of his great worth, and of the services which, throughout a course of years, he had rendered them, elected him as their president; but being extremely sensitive in regard to oaths, he declined the intended honour, in a letter addressed to "his much respected friend Mr Robert Hooke, professor of mathematics at Gresham College." He published a Discourse

of things above Reason, inquiring, whether a philosopher should admit any such, 1681, 8vo; New Experiments and Observations upon the icy Noctiluca, to which is added a chemical paradox, grounded upon new Experiments, 1682, 8vo; and a continuation of New Experiments, Physico-mechanical, touching the spring and weight of the air, 1682, 8vo. In 1683 he published nothing except a short letter to Dr Beale, in relation to the making of fresh water out of salt; but in 1684 he gave to the public two very considerable works, namely, Memoirs for the natural history of Human Blood, especially the spirit of that liquor, 8vo; and Experiments and Considerations about the porosity of bodies.

In 1685 Mr Boyle obliged the world with Short Memoirs for the natural experimental history of Mineral Waters, with directions as to the several methods of trying them; an essay on the great effects of even languid and unheeded motion, which was received with great and general applause; a treatise of the Reconcilableness of specific medicines to the Corpuscular Philosophy, to which is annexed a discourse about the advantages of the use of simple medicines, 8vo; and a theological tract of the high veneration man's intellect owes to God, peculiarly for his wisdom and power, 8vo.

In the beginning of the succeeding year came out his Free Inquiry into the vulgarly received notion of Nature, a piece which was greatly admired; and in 1687 he published the martyrdom of Theodora and Didymia, a juvenile performance. But his Disquisition about the final causes of natural things, in 8vo, appeared in 1688.

Mr Boyle now began to find that his health and strength, notwithstanding all his care and caution, gradually declined; a circumstance which put him upon using every possible method of husbanding his remaining time for the benefit of the learned. With this view he no longer communicated particular discourses or new discoveries to the Royal Society, because it could not be done without withdrawing his thoughts from occupations which he thought of still greater importance. In order the more steadily to attend to these, he resigned his post of governor of the corporation for propagating the gospel in New England; and even went so far as to signify to the world, by public advertisement,¹ that he could no longer receive visits as usual.

Among the other works which by this means he gained time to finish, there is reason to believe that one was a collection of elaborate processes in chemistry, concerning which he wrote a letter to a friend, stating, that "he left it as a kind of hermetic legacy to the studious disciples of that art." Besides these papers, which were committed to the care of one whom he esteemed his friend, he left many behind him at his death relating to chemistry, which, by a letter directed to one of his executors, he desired might be inspected by three physicians whom he named, and that some of the most valuable might be preserved.

In the meantime Mr Boyle published some other works, as *Medicina Hydrostatica*, or, Hydrostatics applied to the Materia Medica, 1690, 8vo; *The Christian Virtuoso*, to which are subjoined, A discourse about the distinction that represents some things as above reason, but not con-

¹ This curious intimation begins in the following manner:—"Mr Boyle finds himself obliged to intimate to those of his friends and acquaintance that are wont to do him the honour and favour of visiting him, 1. That he has by some unlucky accidents, namely, by his servant's breaking a bottle of oil of vitriol over a chest which contained his papers, had many of his writings corroded here and there, or otherwise so maimed, that, without he himself fill up the lacunæ out of his memory or invention, they will not be intelligible; 2. That his age and sickness have for a good while admonished him to put his scattered and partly defaced writings into some kind of order, that they may not remain quite useless; and, 3. That his skilful and friendly physician, Sir Edmund King, seconded by Mr Boyle's best friends, has pressingly advised him against speaking daily with so many persons as are wont to visit him, representing it as what cannot but waste his spirits," &c. He ordered likewise a board to be placed over his door, with an inscription signifying when he did, and when he did not, receive visitors.

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trary to reason; and the first chapters of a discourse entitled *Greatness of mind promoted by Christianity*. Lastly, he published, in the spring of 1691, *Experimenta et Observationes Physicæ*, treating of several subjects relating to natural philosophy, in an experimental way, 8vo.

About the beginning of summer he began to feel such an alteration in his health as induced him to think of settling his affairs; and accordingly, on the 18th of July he signed and sealed his last will, to which he afterwards added several codicils. In October his distemper increased; and on the last day of December 1691 he departed this life, in the sixty-fifth year of his age. He was buried in St Martin's Church in the Fields, Westminster, on the 7th of January following; and his funeral sermon was preached by Dr Gilbert Burnet, bishop of Salisbury. In this discourse the bishop tells us, that he was the better able to give a character of the deceased from the many happy hours he had spent in conversation with him in the course of twenty-nine years. He gives a large account of Mr Boyle's sincere and unaffected piety, more especially of his zeal for the Christian religion, without having any narrow notions concerning it, or mistaking, as so many do, a bigoted heat in favour of a particular sect, for that zeal which is an ornament of a true Christian; and he mentions as a proof of this, his noble foundation for lectures in defence of the gospel against infidels of all sorts. Mr Boyle was at the charge of the translation and impression of the New Testament into the Malayan tongue, which he sent over all the East; he gave a noble reward to the person who translated Grotius's book *On the Truth of the Christian Religion* into Arabic; and he was at the charge of a whole impression, which he took care to have distributed in all the countries where that language was understood. He had resolved to have carried on the impression of the New Testament in the Turkish language; but the Levant Company thought it became them to be the promoters of the design, and so suffered him only to contribute largely towards it. He expended £700 on the edition of the Irish Bible, which he ordered to be distributed in Ireland; and he contributed liberally to the impression of the Welsh Bible. He gave, during his life, £300 to advance the design of propagating the Christian religion in America; and as soon as he heard that the East India Company were entertaining propositions for a similar design in the East, he sent £100 as a beginning and an example, intending, however, to extend his contribution as soon as the scheme had been fairly commenced. In other respects his charities were so bountiful and extensive, that they amounted to upwards of £1000 a year. Of his merits as an inquirer into nature, Dr Boerhaave, after declaring Lord Bacon to be the father of experimental philosophy, says, that "Mr Boyle, the ornament of his age and country, succeeded to the genius and inquiries of the great Chancellor Verulam. Which (he adds) of Mr Boyle's writings shall I recommend? All of them. To him we owe the secrets of fire, air, water, animals, vegetables, fossils; so that from his works may be deduced the whole system of natural knowledge." This may now appear extravagant and exaggerated; but at the time it was not unreasonably considered as only a just tribute to extraordinary merit and indefatigable perseverance.

In his person Mr Boyle was tall, but slender; and his countenance was pale and emaciated. His constitution was so delicate, that he had divers sorts of cloaks to put on when he went abroad, according to the temperature of the air; and in this he governed himself by the thermometer. He escaped the small-pox indeed; but for nearly forty years he laboured under such feebleness of body, and such depression of strength and spirits, that it is astonishing how he could read, meditate, make experiments, and write, as

he did. He had likewise a weakness in his eyes, which made him very tender of them, and extremely apprehensive of such distempers as might affect them. He also imagined, that if sickness should confine him to bed, it might increase the pains of the stone to a degree above his strength to support; and this was the ground of the caution with which he was observed to live. But as to life itself, he had that just indifference for it which became a philosopher and a Christian. Mr Boyle was never married. In the memorandum of his life set down by Bishop Burnet, it is remarked that he abstained from marriage, at first out of policy, but afterwards more philosophically; and we find from a letter of Dr John Wallis to him, dated Oxford, 17th July 1669, that he had had an overture made to him in regard to the Lady Mary Hastings, sister to the Earl of Huntingdon. But it does not appear from any of his papers that he had ever entertained the least thoughts of the kind; and there is a letter of his, written when he was young to Lady Barrymore, his niece, which almost shows that he never did.

We shall conclude this account of Mr Boyle with a list of his posthumous works, which are as follow: 1. The General History of the Air designed and begun; 2. General Heads for the Natural History of a Country, great or small, drawn out for the use of Travellers and Navigators; 3. A paper of the honourable Robert Boyle's, deposited with the secretaries of the Royal Society, October 14, 1680, and opened since his death, being an account of his making the phosphorus, September 30, 1680; 4. An Account of a way of examining Waters as to Freshness or Saltness; 5. A free Discourse against customary Swearing, and a Dissuasive from Cursing, 1695, 8vo; and 6. Medicinal Experiments, or a Collection of choice remedies, chiefly simple and easily prepared, useful in families, and fit for the service of the country people; being the third and last volume published from the author's original manuscript, 1698, 12mo. Editions of all his works have been printed at London, in five volumes folio, and six volumes 4to.

BOYLE, *Charles*, Earl of Orrery in Ireland, and Baron of Maston in the county of Somerset, was the second son of Roger second Earl of Orrery, and was born in August 1679. He was educated at Christ Church, Oxford, and soon distinguished himself by his learning and abilities. Like the first Earl of Orrery, he was an author, a soldier, and a statesman. He translated the life of Lysander from the Greek of Plutarch; and he published a new edition of the epistles of Phalaris, which engaged him in a literary dispute, in which he defended the genuineness of those epistles against Dr Bentley. He was three times member for the town of Huntingdon; but his elder brother, Lionel Earl of Orrery, dying without issue on the 23d of August 1703, he succeeded to that title; and, entering into the queen's service, obtained a regiment, upon which he behaved with so great bravery, that, in 1709, he was raised to the rank of major-general, and sworn one of her majesty's privy-council. At the battle of the Wood he gave the strongest proofs of intrepid courage, remaining at the head of his regiment in the hottest part of the action till the victory was decided. His lordship had the honour of being appointed the queen's envoy to the states of Brabant and Flanders; and having honourably discharged this trust, he was raised to the dignity of British peer, by the title of Lord Boyle, Baron of Maston, in Somersetshire. He received several additional honours in the reign of King George I.; but having had the misfortune to fall under the suspicion of the government, he was committed to the Tower, and remained there some time in confinement. He was at length admitted to bail, however; and nothing being found that could be regarded

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Boyle. as sufficient ground for prosecution, he was discharged. His lordship died, after a slight indisposition, on the 21st of August 1731. To his tutor Mr Atterbury he probably owed in good part the relish he possessed for the writings of the ancients. He made these his constant study, and seems to have entertained a very unreasonable degree of contempt for the greater part of our modern wits and authors. His lordship had also a turn for medicine, which led him not only to buy and read whatever was published on that subject, but also to employ his friends to send him accounts of herbs and drugs from foreign countries.

BOYLE, *John*, Earl of Cork and Orrery, a nobleman distinguished for his learning and genius, was the only son of Charles Earl of Orrery, and was born on the 2d of January 1707. He was educated at Christ Church College, Oxford; but, as he himself declares, early disappointments, indifferent health, and many untowards accidents, rendered him fond of retirement, and of improving his talents for polite literature and poetry. Of these he has left several favourable specimens. He also wrote a translation of the Letters of Pliny the Younger, with various notes, for the service of his eldest son Lord Boyle, in two volumes 4to. This was first published in 1751. The year following he published the Life of Dean Swift, in several letters, addressed to his second son Hamilton Boyle; and he afterwards printed Memoirs of Robert Cary, Earl of Monmouth, a manuscript presented to him by a relation, with explanatory notes. He died in 1762.

BOYLE'S *Lectures*, a course of eight sermons or lectures preached annually, and originally set on foot by the Honourable Robert Boyle, whose design, as expressed in a edicil annexed to his will in 1691, was to prove the truth of the Christian religion against infidels, without descending to any controversies among Christians, and to answer new difficulties or scruples that might from time to time arise. For the support of this lecture Mr Boyle assigned the rent of his house in Crooked-lane to some learned divine within the bills of mortality, to be elected for a time not exceeding three years, by Archbishop Tension and others. But the fund proving precarious, the salary was ill paid; and to remedy this inconvenience, the archbishop procured a yearly stipend of L.50 for ever, to be paid quarterly, charged on a farm in the parish of Brill in the county of Bucks. To this appointment we are indebted for many elaborate defences both of natural and revealed religion.

BOYNE, a river of Ireland, which rises in Queen's County in the province of Leinster, and running north-east by Trim and Cavan, falls at last into the Irish Channel a little below Drogheda. It is memorable for a battle fought on its banks between James II. and King William III. in which the former was defeated.

BOYSE, Boys, or Bois, *John*, one of the translators of the Bible in the reign of James I. was son of William Bois, rector of West Stowe, near St Edmundsbury, Suffolk, and born at Nettlestead in Suffolk on the 3d of January 1560. He was taught the first rudiments of learning by his father; and his capacity was such, that at the age of five he was able, it is said, to read the Bible in Hebrew. He went afterwards to Hadley school; and at fourteen was admitted of St John's College, Cambridge, where he distinguished himself by his skill in Greek. Happening to catch the small-pox when he was a cleft fellow, he caused himself to be carried for admission in blankets, in order to preserve his seniority. He applied himself for some time to the study of medicine; but, fancying himself affected with every disease he read of, he quitted that science. He was during ten years principal Greek lecturer in his college, and read every day. He voluntarily read a Greek lecture for some years at four in the morning, in his own

chamber, which was frequented by many of the fellows. On the death of his father, he succeeded to the rectory of West Stowe. At the age of thirty-six he married the daughter of Mr Holt, rector of Buxworth, in Cambridge-shire, whom he succeeded in that living in October 1596. On his quitting the university, the college gave him L.100. But his young wife, who had been bequeathed to him with the living, which was an advowson, having proved a bad economist, and he himself being wholly addicted to his studies, he soon became so much involved in debt that he was obliged to sell his choice collection of books, consisting of almost every Greek author then extant. When a new translation of the Bible was directed to be made, Mr Bois was elected one of the Cambridge translators. He performed not only his own, but also the part assigned to another, with great reputation. He was also one of the six who had met at Stationers' Hall to revise the whole; which task they performed in nine months, having each, from the company of stationers, during that time, thirty shillings a week. He afterwards assisted Sir Henry Savile in publishing the works of St Crysostom. In 1615 Dr Laneelot Andrews, bishop of Ely, bestowed on him, unasked, the prebend in his church. He died on the 14th of January 1643, in the eighty-fourth year of his age, and left a great many manuscripts behind him, particularly a Commentary on almost all the books of the New Testament. When Bois was a young student at Cambridge, he received from the learned Dr Whitaker three rules for avoiding those distempers which usually attend a sedentary life, to which he adhered with equal constancy and success. The first was, To study always standing; the second, Never to study in a window; and the third, Never to go to bed with his feet cold.

BOYSE, *Samuel*, a man remarkable for the fineness of his genius, the lowness of his manners, and the wretchedness of his life. He was born in 1708, and received the rudiments of his education at a private school in Dublin. When he was but eighteen years old, his father, a non-conformist clergyman, sent him to the university of Glasgow, that he might finish his education there. But he had not been a year at the university, when he fell in love with the daughter of a tradesman in that city, and was imprudent enough to interrupt his education by marrying her before he had entered into his twentieth year. The natural extravagance of his temper soon exposed him to want; and as he had now the additional charge of a wife, his reduced circumstances obliged him to quit the university, and go over with his wife (who also carried a sister along with her) to Dublin, where they relied on the old clergyman for support. Young Boyse was of all men the farthest removed from the character of gentleman. He had no graces of person, and still fewer of manners or conversation. Never were three people of more libertine habits than young Boyse, his wife, and his sister-in-law; yet the two women wore such a mask of decency before the old non-conformist gentleman, that his fondness was never abated. The estate which he possessed in Yorkshire was sold to discharge his son's debts; and his means were utterly wasted, so that, when seized with his last sickness, he was entirely supported by presents from his congregation, and at length buried at their expense. We have no further account of Boyse till we find him soon after his father's death at Edinburgh. At this place his poetical genius raised him many friends, and some patrons of eminence. He published a volume of poems in 1731, to which are subjoined *The Tablature of Cebes*, and *A Letter upon Liberty*, inserted in the *Dublin Journal*, 1726, by which he obtained considerable reputation. These poems are addressed to the Countess of Eglintoun. This amiable lady was the patroness of all men of wit, and greatly distinguished Boyse

while he resided in Scotland. Upon the death of the Viscountess Stormont, Boyse wrote an elegy, which was much applauded by her ladyship's relations. This elegy he entitled *The Tears of the Muses*, as the deceased lady was a woman of the most refined taste in the sciences, and a great admirer of poetry. The Lord Stormont was so much pleased with this mark of attention paid to the memory of his lady, that he ordered a handsome present to be given to Boyse by his attorney at Edinburgh. The notice which Lady Eglintoun and the Lord Stormont took of our poet recommended him likewise to the patronage of the Duchess of Gordon, who was so solicitous to raise him above necessity, that she employed her interest in procuring the promise of a place for him. She gave him a letter, which he was next day to deliver to one of the commissioners of the customs at Edinburgh. But it happened that he was then some miles distant from the city; and that the morning on which he was to have proceeded to town with her Grace's letter of recommendation proved rainy. This slender circumstance was enough to discourage Boyse, who never looked beyond the present moment. He declined going to town on account of the rainy weather; and thus letting slip the opportunity, the place was bestowed upon another, which the commissioner declared he kept for some time vacant in expectation of seeing a person recommended by the Duchess of Gordon. Having defeated all the kind intentions of his patrons towards him, Boyse at last fell into contempt and poverty, which obliged him to quit Edinburgh. He communicated his design of going to London to the Duchess of Gordon, who, having still a high opinion of his poetical abilities, gave him a letter of recommendation to Mr Pope, and obtained another for him to Sir Peter King, the lord chancellor of England. Lord Stormont recommended him to the solicitor general his brother, and many other persons of the first fashion. Upon receiving these letters he quitted Edinburgh with great caution, despised by all, and regretted by none but his creditors. Upon his arrival in London, he went to Twickenham in order to deliver the Duchess of Gordon's letter to Mr Pope; but that gentleman not being at home, Mr Boyse never gave himself the trouble to repeat his visit. He wrote poems; but these, though possessing some intrinsic merit, were lost to the world, by being introduced with no advantage. He had so great a propensity to low company, that his acquaintance were generally of such a cast as could be of no service to him; and those in higher life he addressed by letters, not having sufficient breeding or common good manners to converse familiarly with them. Thus unfit to support himself in the world, he was exposed to a variety of distresses, from which he could invent no means of extricating himself except by writing mendicant letters. Yet this man, of so abject a spirit, was voluptuous and luxurious; he had no taste for any thing elegant, but was to the last degree expensive. Often when he had received a guinea in consequence of a supplicating letter, he would go into a tavern, order a supper to be prepared, drink of the richest wines, and spend all the money that had just been given him in charity, without having any one to participate the regale with him, and whilst his wife and child were starving at home.

About the year 1740, Boyse, reduced to the last extremity of human wretchedness, had not a shirt, a coat, nor any kind of apparel, to put on; the sheets in which he lay were carried to the pawn-broker's, and he was obliged to be confined to his bed with no other covering than a blanket. He had little support except what he got by writing letters in the most abject style; and he remained for six weeks in the situation we have described. During this time he had some employment in writ-

ing verses for the Magazines. He sat up in bed with the blanket wrapt about him, through which he had cut a hole large enough to admit his arm, and placing the paper upon his knee, scribbled in the best manner he could the verses he was obliged to write; whatever he got by these, or by begging letters, being barely sufficient for the preservation of life. And perhaps he would have remained much longer in this distressful condition, had not a compassionate gentleman, upon hearing the circumstance related, ordered his clothes to be taken out of pawn, and enabled him to appear abroad again.

About the year 1745 Boyse's wife died. He was then at Reading, and pretended much concern when he heard of her death. His business at Reading was to compile a review of the most material transactions at home and abroad during the war; and in this he has included a short account of the rebellion. Upon his return from Reading, his behaviour was more decent than it had ever been before; and hopes were entertained that a reformation, though late, might be wrought upon him. He was employed by a bookseller to translate *Fenelon on the Existence of a God*; and during the time he was occupied in this he married a second wife, a woman in low circumstances, but well enough suited to his taste. He now began to live with more regard to character, and supported a better appearance than usual; but whilst his circumstances were mending, and his irregular appetites losing their hold, his health visibly declined. While suffering from a lingering illness, he had the satisfaction to observe a poem of his, entitled *The Deity*, recommended by two writers of very opposite principles and talents, Mr Fielding the novellist, and the Reverend James Harvey, author of *The Meditations*.

Boyse's mind was often religiously disposed; he frequently talked upon this subject, and probably suffered a great deal from remorse of conscience. The early impressions of his education were never entirely obliterated; and his whole life was a continued struggle between his reason and his passions, as he was always violating the dictates of the one, while he fell under the dominion of the other. It was in consequence of this war in his mind that he wrote his poem entitled *The Recantation*. In May 1749 he died in obscure lodgings near Shoe-lane, under the influence, it is believed, of sentiments very different from those in which he had spent the greater part of his life. An old acquaintance of his endeavoured to collect money to defray the expenses of his funeral, and spare his remains the dishonour of being buried by the parish; but his efforts were vain, and the corpse of this son of the Muses was, with very little ceremony, hurried away by the parish-officers.

Never was a life spent with less grace than that of Boyse, and never were good abilities given to less purpose. His genius was not confined to poetry alone. He had a taste for painting, music, and heraldry; with the last of which he was very well acquainted. His poetical pieces, if collected, would form six moderate volumes. Many of them are scattered in *The Gentleman's Magazine*, marked with the letter Y, and the signature *Alceus*. Two volumes were published in London. An ode of his in the manner of Spenser, entitled *The Olive*, was addressed to Sir Robert Walpole, which procured him a present of ten guineas. He translated a poem from the High Dutch of Van Haren, in praise of peace, upon the conclusion of that of Aix-la-Chapelle; but the poem which procured him the greatest reputation was that upon the attributes of the Deity. He was employed by Mr Ogle to translate some of Chaucer's tales into modern English, which he executed with great spirit, and received at the rate of threepence a line for his trouble. Mr Ogle published a

Boyse.

B Quadro
||
Bracciolini.

complete edition of *Canterbury Tales modernized*; and Boyse's name is put to such tales as were done by him. In 1743 Boyse published, without his name, an ode on the battle of Dettingen, entitled *Albion's Triumph*.

B QUADRO, QUADRATO, or *Durale*, in *Music*, called by the French *b quarré*, from its figure $\square$. This is what we call B *natural* or *sharp*, in distinction to B *mol* or *flat*. If the flat *b* be placed before a note in the thorough bass, it intimates that its third is to be minor; and if placed with any cipher over a note in the bass, as *b* 6, or *b* 5, it denotes that the fifth or sixth thereto are to be flat. But if the quadro $\square$ be placed over any note, or with a cipher, in the thorough bass, it has the contrary effect; for thereby the note or interval thereto is raised to its natural order.

BRÁ, a city of the province of Alba, in the kingdom of Sardinia. It stands on the river Stura, and contains 11,200 inhabitants, who find employment in the cultivation of silk, and the extensive manufacture of silk goods, and in making linen and coarse cloth.

BRABANCIONES, in the writers of the middle age, a kind of Netherlands soldiery, infamous for rapine; a sort of commissioned banditti, who hired themselves to fight for any one who could pay them. The word is variously written by the historians of those days; but every variety is derived from the country of Brabant, which was the chief nursery of these troops. They are also frequently confounded with the *Routiers*, *Roturiers*, *Ruptarii*, *Ruterarii*, *Corteraux*, and others.

BRABANT. See NETHERLANDS.

BRABEUTES, or BRABEUTA, in *Antiquity*, an officer among the Greeks, who presided at the public games, and decided such disputes as occurred among the antagonists in the gymnastical exercises. The number of brabeutæ was not fixed; sometimes there was only one, but more commonly they amounted to nine or ten.

BRACCIOLINI, FRANCIS, an Italian poet, a native of Pistoja, and the friend of Pope Urban VIII. was born about the year 1566. Removing to Florence, he was admitted into the academy there, and devoted himself to literature. At Rome he entered into the service of Cardinal Maffeo Barberini, with whom he afterwards went to France. After the death of Clement VIII. he returned to his own country, and for some years prosecuted his studies in retirement. When his patron Barberini was elected pope, under the name of Urban VIII., Bracciolini repaired to Rome, where he was well received, and made secretary to the pope's brother, Cardinal Antonio. He had also the honour conferred on him of taking a surname from the arms of the Barberini family, which were bees; and he was afterwards known by the name of *Bracciolini dell'Api*. He resided in Rome during the whole of Urban's pontificate, frequenting the most illustrious academies, and listened to with general applause, but, at the same time, censured for his sordid avarice. On the death of this pontiff he returned to his native city, where he died in the year 1645. Bracciolini, was a copious writer. There is scarcely any species of poetry, epic, dramatic, pastoral, lyric, or burlesque, which he did not attempt. He is principally noted for his mock-heroic poem entitled *Scherno degli Dei*, which disputes priority of date with Tassoni's *Secchia Rapita*. In merit, indeed, its inferiority is acknowledged, yet it obtained considerable applause. Of his serious heroic poems, the most celebrated is the *Croce Racquistata*, which by some is placed next to the great works of Ariosto and Tasso, *sed magno intervallo*. He celebrated the elevation of his patron Urban VIII. in a poem of twenty-three books, which shows with what facility he could write verses. His dramatic pastoral, entitled *L'Amoroso Sdegno*, is accounted one of the best pro-

ductions of the age in which it was written; and some of his tragedies met with much applause, particularly his *Evandro*. The following is a pretty correct list of his acknowledged works: 1. *La Croce Racquistata*, poema eroico, canti xv. Paris, Rueles, 1605, 8vo; 2. *Lo Scherno degli Dei*, poema eroico-giocosso, canti xiii. Florence, 1618, 4to; 3. *L'Elezione di Papa Urbano VIII.* Rome, 1628, 4to; 4. *La Rocella espugnata*, Rome, 1630, 12mo; 5. *La Bulgheria Convertita*, poema eroico in xx. canti, Rome, 1637, 12mo; 6. *L'Evandro, l'Arpalice, la Penteseila*, tragedies, Rome, 1612, 1613, and 1615, 8vo; 7. *L'Amoroso Sdegno, favola Pastorale*, Venice, 1597; 8. *Ero e Leandro, favola Marittima con gli intermedj Apparenti*, Rome, 1630, 12mo; and *Il Monserrato*, a drama, Rome, 1629, 12mo. The titles of his other and less considerable performances may be found in Mazzuchelli.

BRACE is commonly taken for a couple or pair, and applied by huntsmen to several kinds of game, as a brace of bucks, foxes, hares, grouse, and the like.

BRACE, in writing or printing, a crooked line inclosing a passage, as in a triplet.

BRACES, in the sea-language, are ropes belonging to all the yards of a ship except the mizen, two on each yard, reeved through blocks that are fastened to pennants, seized to the yard-arms. Their use is either to square or traverse the yards. Hence to brace the yard is to bring it to either side. All braces come aftward on. Thus the main brace comes to the poop; the main-top-sail brace comes to the mizen-top, and thence to the main shrouds; the fore and fore-top-sail braces come down by the main and main-top-sail stays; and so of the rest. But the mizen-bowline serves to brace to the yard, and the cross-jack braces are brought forwards to the main-shrouds, when the ship sails close on a wind.

BRACELET, an ornament worn on the wrist, and much used among the ancients. It was made of different materials, and in different fashions, according to the age and quality of the wearer. The word is French, *bracelet*; which Menage derives further from *braceletum*, a diminutive of *bracile*, a word occurring in writers of the age of Justinian; all formed from the Latin *brachium*, an arm. It amounts to the same with what was called by the ancients *armilla*, *brachiale*, *occabus*; and in the middle ages *boga*, *bauga*, *armispatha*.

BRACHMINS, or BRACHMANS, a branch of the ancient Gymnosophists or philosophers of India. See BRAMINS.

BRACHYGRAPHY, the art of short-hand writing. See SHORT HAND.

BRACHYLOGY, (from *βραχυς*, short, and *λογος*, expression), in *Rhetoric*, the expressing of any thing in the most concise manner. This, as far as is consistent with perspicuity, is a virtue and beauty of style; but if obscurity be the consequence, which is often the case, it becomes a blemish and defect. Quintilian gives an instance of brachylogy from Sallust: *Mithridates corpore ingenti perinde armatus*; "Mithridates, as it were, armed with the hugeness of his stature."

BRACKE, or BRACHE, a bailiwick in the duchy of Oldenburg, containing three towns, with 6108 inhabitants. The chief place, of the same name, is situated on the Wiser, and is of importance from the ships, which require a greater depth of water than is to be found near Bresner, commonly remaining to discharge or receive their cargoes there. It contains only 1100 inhabitants.

BRACKENHEIM, a bailiwick in the circle of the Neckar, of the kingdom of Wirtemberg. It extends over ninety-eight square miles, and comprehends five cities, two market-towns, and twenty-nine villages, with 24,096 inhabitants. The city, which gives name to the bailiwick, is

Bract situated on the river Zaber, and contains an ancient castle, and 1684 inhabitants, who produce some good wine.

BRACKET, among carpenters and others, means a kind of wooden stay, serving to support shelves and the like.

BRACKETS, in a ship, the small knees, serving to support the galleries, and commonly carved. The timbers that support the grating in the head are also called *brackets*.

BRACKETS, in *Gunnery*, are the cheeks of the carriage of a mortar. Being made of strong planks of wood, of almost a semicircular figure, and bound round with thick iron plates, they are fixed to the beds by four bolts, which are called *bed-bolts*, and, rising up on each side of the mortar, serve to keep her at any elevation by means of some strong iron bolts, called *bracket-bolts*, which go through these cheeks or brackets.

BRACKLEY, a borough and market-town of the hundred of King's Sutton, in Northamptonshire, sixty-three miles from London. It had formerly much trade in wool, and some manufactures; but now chiefly depends on the agriculture of its vicinity. It has two churches, a handsome market-house, an endowed free school, and an hospital. The market is held on Wednesday. It returns two members to Parliament, chosen by the corporate body under the influence of the Earl of Bridgewater. The inhabitants amounted in 1801 to 1495, in 1811 to 1580, and in 1821 to 2236.

BRACTON, HENRY, Lord Chief Justice of England in the reign of Henry III., was probably a native of Devonshire. He was educated at Oxford, where he took the degree of doctor of laws, and was made one of the itinerant judges about the year 1244. Ten years after he became chief justice, and had the Earl of Derby's house in London assigned him for his town residence during the minority of that nobleman. He is said to have filled this important office with singular reputation during twenty years. The time of his death is not known; probably it occurred in the reign of Edward I. He wrote *De Legibus et Consuetudinibus Angliæ*, which is one of the most ancient and most methodical books on the laws of England. His method is copied from that of Justinian. This work was printed at London in 1569, folio; and in 1640, in 4to.

BRADFORD, or BRADFORTH, a market-town in the wapentake of Morley, of the west-riding of Yorkshire, 197 miles from London, and situated on a branch of the river Aire. It is built partly on the side of a steep hill, with some of the streets looking over the houses in the others. It has extensive manufactures of worsted stuffs, and, during the war, had several founderies for cannon, and other heavy iron articles. The market is held on Thursday. The parish church is a remarkably fine Gothic edifice, with a melodious peal of bells. The inhabitants amounted in 1801 to 6393, in 1811 to 7761, and in 1821 to 13,064. The whole parish of Bradford, comprehending twelve townships or chapelries, contained, in 1801, 28,985 inhabitants, who in 1821 had increased to 52,954.

BRADFORD, a market-town in the hundred of the same name, of the county of Wilts, 104 miles from London. It is situated on the banks of the river Avon, near to the Kennet and Avon Canal, having, by those two channels, communication with London and with Bristol. It is a great manufacturing place for broad cloths and cassimeres. The streets are narrow, crooked, and ill built; but the situation is sheltered, and it is very healthy. There are good markets on Monday and Saturday. The inhabitants amounted in 1801 to 8540, in 1811 to 9230, and in 1821 to 10,231.

BRADFORD, John, a divine, and martyr to the Reformation, was born in the early part of the reign of Henry VIII. at Manchester, in Lancashire. Being a good penman and accountant, he became secretary to Sir John

Harrington, who was several times employed by King Henry, and his successor Edward VI., as paymaster to the troops abroad. Bradford at this time was a gay man, and to support his extravagance made free with the king's money; but being at last unable to endure the reflection of his guilt, he determined to make restitution, and actually repaid the money. Quitting his employment of secretary about the year 1547, he took chambers in the Inner Temple, and for some time studied the law; but finding in himself an inclination to preach the gospel, he removed the following year to Catherine-hall, Cambridge, where he applied with uncommon assiduity to the study of divinity, and in a much shorter time than usual was admitted to the degree of master of arts, and soon after made fellow of Pembroke-hall. Bishop Ridley, who in 1550 was translated to the see of London, being charmed with Bradford's application and zeal, now sent for him to the metropolis, ordained and appointed him his chaplain. In 1553 he was also made chaplain to Edward VI.; during which time he became one of the most popular preachers in the kingdom. Such a reformer was too dangerous to be tolerated in the succeeding reign. Accordingly, Mary had hardly got possession of the crown when Bradford's persecutions began. He was first confined in the Tower for sedition, where he continued a year and a half. During this time he wrote several epistles, which were dispersed in various parts of the kingdom. He was afterwards removed to other prisons, and at last brought to trial before that court of inquisition in which Gardiner sat as chief inquisitor, where he defended his principles to the last, in contempt of their utmost power. They condemned him to the flames, and he was accordingly burnt alive in Smithfield, on the 1st of July 1555. His works are, 1. Seventy-two Letters, written to various people, whilst the author was in prison, and printed in Bishop Coverdale's collection; 2. Ten Letters, printed in Fox's Acts and Monuments; 3. Complaint of Verity, 1559, 8vo; 4. Three Examinations before the Commissioners, and his Private Talk with the Priests, with the Original of his Life, 1561, 8vo; 5. Two Notable Sermons 1574, 8vo, 1631; 6. Godly Meditations and Prayers, 1614, 24to; 7. Treatise of Repentance, 1622; with several translations and other pieces.

BRADING, a town on the eastern side of the Isle of Wight, in the county of Hampshire, ninety-nine miles from London. It has a harbour capacious but shallow, and dry at low water. It has little trade, depending chiefly on the rural inhabitants in its vicinity. A new church has been recently built here. The inhabitants amounted in 1801 to 1529, in 1811 to 1715, and in 1821 to 2023.

BRADLEY, DR JAMES, a celebrated English astronomer, the third son of William and Jane Bradley, was born at Sherborne in Dorsetshire in the year 1692. He was educated for the university at North Leach by Mr Egles and Mr Brice, who kept a boarding-school there; and from North Leach he was sent to Oxford. His friends intending him for the church, his studies were regulated with that view; and as soon as he was of sufficient age to receive holy orders, the Bishop of Hereford, who had conceived a great esteem for him, gave him the living of Bridstow, and soon after he was inducted to that of Welfrie in Pembrokeshire. But notwithstanding these advantages, from which he might have promised himself still further advancement in the church, he at length resigned his livings, that he might be wholly at liberty to pursue his favourite study of mathematics and astronomy. He was nephew to Mr Pound, a gentleman favourably known to the learned world by many excellent observations, and who would have enriched it with more, if the journals of his voyages had not been burnt at Pulo Con-

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Bradley. dore, when the place was set on fire, and the English who had settled there cruelly massacred, Mr Pound himself very narrowly escaping with his life. With this gentleman Mr Bradley passed all the time he could spare from the duties of his function; and perhaps he sometimes trespassed upon them. He was then sufficiently acquainted with the mathematics to improve by Mr Pound's conversation; yet it does not appear that, in this study, he had any preceptor but his genius, or any assistant but his labour and perseverance.

It may easily be imagined that the example and conversation of Mr Pound did not render Bradley fonder of his profession than he was before. He continued, however, as yet to fulfil the duties of it, though at this time he had made such observations as laid the foundation of those discoveries which afterwards distinguished him as one of the best astronomers of his age. Although these observations were made as it were by stealth, they gained him at first the notice and then the friendship of the Lord Chancellor Macclesfield, Mr (afterwards Sir Isaac) Newton, Mr Halley, and many other members of the Royal Society, into which he was soon elected a member. About the same time the chair of Savilian professor of astronomy becoming vacant by the death of the celebrated Dr Keil, Mr Bradley was elected to succeed him on the 31st of October 1721, being then just twenty-nine years old; and he had for his colleague Mr Halley, who was professor of geometry on the same foundation. Bradley, upon his being elected to this professorship, gave up both his livings, and with great joy quitted a situation in which his duty was directly at variance with his inclination. From this time he applied himself wholly to the study of his favourite science; and in the year 1727 he published his *Theory of the Aberration of the Fixed Stars*, which is allowed to be one of the most useful and ingenious discoveries of modern astronomy. Three years after this discovery, by which Mr Bradley acquired great reputation, he was appointed lecturer in astronomy and physics, at the Museum of Oxford.

He pursued his studies with equal application and delight; and in the course of his observations, which were innumerable, he discovered that the inclination of the earth's axis upon the plane of the ecliptic was not always the same, but that it varied backwards and forwards some seconds, and that the period of these variations was nine years. This period seemed altogether unaccountable, as it could not be supposed to have any thing in common with the revolution of the earth, which is performed in one year. Mr Bradley, however, discovered the cause of this phenomenon in the Newtonian system of attraction, and published his discovery in 1737; so that in the space of about ten years he communicated to the world two of the finest discoveries in modern astronomy, which will for ever form an epoch in the history of that science.

Mr Bradley always preserved the esteem and friendship of Mr Halley, who, being worn out by age and infirmities, thought he could do nothing better for the service of astronomy than procure for Mr Bradley the place of regius professor of astronomy at Greenwich, which he had himself held for many years with great reputation. With this view he wrote many letters, which have been since found among Mr Bradley's papers, desiring his permission to apply for a grant of the reversion of it to him, and even offering to resign in his favour, if it should be thought necessary; but before Mr Halley could bring this kind project to bear, he died. Mr Bradley, however, obtained the place afterwards, by the favour and interest of Lord Macclesfield, who was subsequently president of the Royal Society. As soon as the appointment of Mr Bradley to this place became known, the university of Ox-

ford sent him a diploma creating him doctor of divinity. The appointment of astronomer at Greenwich placed Mr Bradley in his proper element, and he pursued his observations with unwearied diligence. However numerous the collection of astronomical instruments at the observatory at Greenwich, it was impossible that so accurate an observer as Dr Bradley should not desire to increase them, as well to answer those particular views, as in general to make observations with greater exactness. In the year 1748, therefore, he took the opportunity of the annual visit made by the Royal Society to the observatory, in order to examine the instruments and receive the professor's observations for the year, to represent so strongly the necessity of repairing the old instruments, and purchasing new ones, that the society thought proper to represent it to his majesty, and he gave them £1000 for that purpose. This sum was laid out under the direction of Dr Bradley, who, with the assistance of Mr Graham and Mr Bird, furnished the observatory with as complete a collection of astronomical instruments as the most skillful and diligent observer could desire. Dr Bradley, furnished with such assistance, pursued his observations with new assiduity; an incredible number of which were found after his death, and put into the hands of the Royal Society.

It has been already observed, that when Dr Bradley was elected to the professor's chair at Oxford, he gave up his two livings, which were at such a distance that he could not possibly fulfil the duties of them himself; but it happened, that after he was settled at Greenwich, the living of that parish, which is very considerable, became vacant, and was offered to him, as he was upon the spot to perform the duty, and had the claim of uncommon merit to the reward. This, however, Dr Bradley, to his honour, refused, fearing that the duties of the astronomer would too much interfere with those of the divine. His majesty, on hearing of the refusal, was so pleased with it, that he granted him a pension of £250 a year, in consideration of his great abilities and knowledge in astronomy and other branches of the mathematics, which had proved so advantageous to the commerce and navigation of Great Britain, as is particularly mentioned in the grant, dated the 15th of February 1752. Dr Bradley, about the same time, was admitted into the council of the Royal Society. In the year 1748 he was admitted a member of the Royal Academy of Sciences and Belles-lettres of Berlin, upon the death of M. Crevier, first physician to his Catholic majesty; in the year 1752, a member of the Imperial Academy at Petersburg; and in 1757, of that instituted at Bologna.

Dr Bradley was still indefatigable in his observations, and every honour he received became an incitement to obtain new distinction; but his corporeal abilities at length declined, though his intellectual suffered no abatement. In the year 1780 he became extremely weak and infirm; and towards the end of June 1762 he was attacked with a total suppression of urine, which on the 12th of July following put an end to his life, in the seventieth year of his age. He was buried at Mitchin Hampton, in Gloucestershire, in the same grave with his mother and his wife. In the year 1744 he married Susannah Peach, the daughter of a gentleman of that name in Gloucestershire, by whom he had only one daughter.

As to his character, he was remarkable for a placid gentle modesty, very uncommon in persons of an active temper and robust constitution; yet, with this untroubled equanimity of temper, he was compassionate and liberal in the highest degree. Although he was a good speaker, and possessed the rare but happy art of expressing his ideas with the utmost precision and perspicuity, yet no man

was a greater lover of silence, and he never spoke except when he thought it absolutely necessary. He did indeed think it necessary to speak when he had a fair opportunity to communicate any useful knowledge in his own way; and he encouraged those who attended his lectures to ask him questions, by the exactness with which he answered, and the care he took to adapt himself to every capacity. He was not more inclined to write than to speak, for he has published very little. He had a natural diffidence, which made him always afraid that his works would injure his character; and he therefore suppressed many, which probably were well worthy of the public attention. He first became known, as it were, in spite of himself; but the distinction which he avoided followed him. He was acquainted with many of the first persons in this kingdom, eminent for rank as well as abilities; he was honoured by men of learning in general; and there was not an astronomer of any eminence in the world with whom he had not a literary correspondence. Upon the whole, it may be said of Dr Bradley, that no man cultivated eminent talents with more success, or had a better claim to be ranked among the greatest astronomers of his age.

BRADNINCH, a town of the hundred of Hayridge, in the county of Devon, 170 miles from London, and six from Exeter. It is a poor manufacturing place, but has a corporation, and formerly returned two members to Parliament; but the inhabitants were relieved from the expense on the plea of poverty, on payment of five marks, in the reign of Henry VII. The inhabitants in 1801 amounted to 1187, in 1811 to 1321, and in 1821 to 1511.

BRADS, among artificers, a kind of nails used in building, which have no spreading heads as other nails have. They are distinguished among ironmongers by six names; as *joiners'-brads*, *flooring-brads*, *batten-brads*, *bill-brads*, *quarter-heads*, and the like. Joiners'-brads are for hard wainscot; batten-brads are for soft wainscot; bill-brads are used when a floor is laid in haste, or for shallow joists subject to warp.

BRADSHAW, HENRY, a Benedictine monk, was born at Chester about the middle of the fifteenth century. Discovering an early propensity to religion and literature, he was received while a boy into the monastery of St Werberg in that city; and having there imbibed the rudiments of education, he was afterwards sent to Gloucester College, in the suburbs of Oxford. Here for a time he studied theology with the novices of his order, and then returned to his convent at Chester, where, in the latter part of his life, he applied himself chiefly to the study of history, and wrote several books. He died in the year 1513, the fifth of Henry VIII. His poetry is not inferior to that of any of his contemporaries. His works are, 1. *De antiquitate et magnificentia Urbis Cestriæ*; 2. *Chronicon*; 3. The Life of the glorious virgin St Werberg, printed at London, 1521, 4to, in verse. The life of St Werberg forms only part of this work, which contains also a description of the kingdom of Mercia, a life of St Etheldred, a life of St Sexburg, the foundation and history of Chester, and the chronicles of some kings.

BRADSHAW, JOHN, descended of an ancient family, originally from Derbyshire, and born in 1586, officiated as president of the court, assembled at Whitehall, which tried Charles I. and condemned that unfortunate prince to lose his head on the scaffold. Being appointed speaker or president of the Parliament under Cromwell, he had a guard assigned him for the safety of his person, together with apartments in Westminster, a sum of £5000 sterling, and considerable territorial domains. But he was not destined to enjoy long the recompense of the judicial service he had rendered; for, according to the pamphlets

of the time preserved in the British Museum, he withdrew from Parliament, and died in obscurity on the 31st October 1659, a year after the death of the Protector. On the restoration of Charles II. the bodies of Bradshaw, Cromwell, and Ireton, were disinterred, suspended on the gallows at Tyburn, and then burned. But several collectors of anecdotes have asserted that Bradshaw's remains escaped this posthumous indignity; for, according to them, having caused a report of his death to be circulated, he passed into the colonies under a feigned name, in order there to enjoy the fortune he had acquired; and signaled himself in various contests in which the colonists were involved with the native Indian tribes. Some suppose that he retired to Barbadoes; others that he sought refuge in Jamaica, the conquest of Cromwell, where his epitaph is said to have been met with, written in the style of the most ardent republican. (*Gentleman's Magazine*, vol. liv. p. 834.) In *Peveril of the Peak* this story is put into the mouth of one of the characters, Major Ralph Bridgenorth, and told with admirable felicity, though, of course, with very considerable embellishment.

BRADWARDIN, THOMAS, archbishop of Canterbury, surnamed the *Profound Doctor*, was born at Hartfield in Sussex about the close of the thirteenth century. He was educated at Merton College, Oxford, where he took the degree of doctor of divinity, and acquired the reputation of a profound scholar, a skilful mathematician, and an able divine. Authors are not at one as to his first preferments. Pitt says he was professor of divinity at Oxford. They agree, however, in asserting, that from being chancellor of the diocese of London, he became a courtier and confessor to Edward III. whom he constantly attended during his war with France; assisting that victorious prince with his advice, animating the troops, and fervently praying for their success. After his return from the war he was made prebendary of Lincoln, and subsequently archbishop of Canterbury. He died at Lambeth in the year 1349, forty days after his consecration, and was buried in St Anselm's Chapel, near the south wall. His works are, 1. *De causa Dei*, printed at London, 1618, published by J. H. Savil; 2. *De Geometria speculativa*, Paris, 1495, 1512, 1530; 3. *De Arithmetica practica*, Paris, 1502, 1512; 4. *De Proportionibus*, Paris, 1495, Venice, 1505, folio; 5. *De Quadratura Circuli*, Paris, 1495, folio.

BRADY, ROBERT, a physician and historian of the seventeenth century, was born in the county of Norfolk, and admitted into Caius College, Cambridge, in 1643. He took his degree of bachelor of physic in 1653, was created doctor in that faculty in 1660, and the same year elected master of his college in pursuance of the king's mandate to that effect. In 1685 he received the appointment of keeper of the records in the Tower of London, and soon after was chosen regius professor of physic in the University of Cambridge. In 1679 he wrote a letter to Dr Sydenham on the influence of air, which was published among the works of that learned person. But his largest and most considerable performance was *An Introduction to the old English History*, and *A Complete History of England from the first entrance of the Romans unto the end of the reign of King Richard II.*, in three volumes folio, usually bound in two. In his Introduction Dr Brady maintains, first, that the representatives of the Commons in parliament, knights, citizens, and burgesses, were not introduced until the forty-ninth of Henry III.; secondly, that William Duke of Normandy made an absolute conquest of the nation; and, thirdly, that the succession to the crown of England is hereditary, descending to the nearest blood, and not elective;—principles which were afterwards adopted by Hume as the basis of his History. In the year 1681 Brady was chosen one of the represen-

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tatives for the university of Cambridge, in the parliament which met at Oxford; and again, 1685, in the parliament of James II., to whom he afterwards became physician in ordinary. But the Revolution put a stop to his public career, and he died in August 1700, immediately after the publication of his History. Dr Brady's other productions were, 1. An Answer to Mr Petyt's Book on Parliaments, London, 1681, 8vo; and, 2. An Historical Treatise of Cities and Burghs or Boroughs, *ibid.* 1690, folio, reprinted in 1704.

BRADY, *Nicholas*, an English divine, the son of Nicholas Brady, an officer of the king's army in the civil war, was born at Bandon in the county of Cork in October 1659. He continued in Ireland till he was twelve years of age; at which period he was sent over to England, entered at Westminster School, and thence in due time removed to Christ Church, Oxford, where he remained about four years. He then returned to Dublin, where his father resided, and immediately commenced bachelor of arts at Trinity College, which afterwards, on his attaining due standing, presented him with a diploma conferring the degree of doctor in divinity. His first ecclesiastical preferment was to a prebend in the Cathedral of St Barry at Cork, to which he was collated by Bishop Wettenhall. He was a zealous promoter of the Revolution, and suffered in consequence. When the troubles broke out in Ireland in 1690, Brady, by his influence, thrice prevented the burning of the town of Bandon, after as many orders had been issued for its destruction; and the same year, being deputed by the people of Bandon, he went over to England to solicit parliament for the redress of some grievances they had suffered while King James was in Ireland. What success attended this mission we know not; but Brady soon afterwards, quitting his preferments in Ireland, settled in London, where he was chosen minister of St Catherine Cree Church, and lecturer of St Michael's Wood-street. He subsequently became minister of Richmond in Surrey, and Stratford-upon-Avon in Warwickshire, and at length rector of Clapham in Surrey, which, together with his living of Richmond, he held till his death. He was also chaplain to the Duke of Ormond's troop of horse-guards, and to their majesties King William and Queen Mary. He died in May 1726, aged sixty-six. Dr Brady was accounted a man of an agreeable temper, and had the reputation of being a polite gentleman, an excellent preacher, and an indifferent poet. His name is familiar as the translator, in conjunction with Mr Tate, of a new version of the Psalms, which was licensed in 1696. He also translated Virgil's *Æneid*, published by subscription in 1726, in four vols. 8vo; and a tragedy entitled *The Rape, or the Innocent Imposture*, both very indifferent performances. His prose works consist of Sermons, three volumes of which were published by himself, and other three by his eldest son, who was a clergyman at Tooting in Surrey.

BRAEMAR, a district of Scotland, in the county of Aberdeen. See ABERDEENSHIRE.

BRAG, a game at cards, where as many may partake as the cards will supply; the eldest hand dealing three to each person at one time, and turning up the last card all round. This being done, each gamester puts down three stakes, one for each card; and the first stake is won by the best card turned up in the dealing round; beginning from the ace, king, queen, knave, and so downwards. When cards of the same value are turned up to two or more of the gamesters, the eldest hand gains; but it is to be observed that the ace of diamonds wins, to whatever hand it be turned up. The second stake is won by what is called the *brag*, which consists in one of the gamesters challenging the rest to turn up cards equal to his. But

it is to be observed that a pair of aces is the best brag, a pair of kings the next, and so on; and a pair of any sort wins the stake from the most valuable single card. In this consists the great diversion of the game; for, by the artful management of the looks, gestures, and voice, it frequently happens that a pair of fives, trois, or even deuces, outrages a much higher pair, and even some pairs royal, to the no small merriment of the company. The knave of clubs is here a principal favourite, making a pair with any other card in hand, and with any other two cards a pair royal. The third stake is won by the person who first makes up the cards in his hand one and thirty; each dignified card going for ten, and drawing from the pack, as usual in this game.

BRAGA, a city, the capital of the province Entre Douro-e-Minho, in Portugal. It is situated on an elevated plain near the river Savado, is fortified and defended by a citadel. The streets are irregular and ill paved, and the houses large, but of an antique fashion. It has an archbishop, and, besides the cathedral, six churches, seven monasteries, an archiepiscopal palace, and several hospitals. The inhabitants amount to 18,000, who are occupied in various manufactures, chiefly for the consumption of the kingdom. Long. 8. 16. W. Lat. 41. 33. N.

BRAGANZA, a city, the capital of the province of Tras os Montes, in Portugal, and the place from which the reigning family originated. It is situated on the river Fervença, one of the tributary streams of the Sabor, is surrounded with walls, and contains about 5000 inhabitants, employed chiefly in the silk trade. Long. 6. 36. W. Lat. 41. 47. N.

BRAHE, TYCHO, a celebrated astronomer, descended of an illustrious family, originally of Sweden, but settled in Denmark, was born on the 14th December 1546, at Knudstorp, in the county of Schonen. He was taught Latin when seven years old, and studied five years under private tutors. His father dying, his uncle sent him, in April 1559, to study philosophy and rhetoric at Copenhagen. The great eclipse of the sun, on the 21st of August 1560, happening at the precise time the astronomers had foretold, he began to look upon astronomy as something divine, and purchasing the Ephemerides of Stadius, gained some notion of the theory of the planets. In 1562 he was sent by his uncle to Leipsic to study law; but astronomy wholly engrossed his thoughts, and he employed all his pocket-money in purchasing books on that science. Having procured a small celestial globe, he used to wait till his tutor went to bed, in order to examine the constellations and learn their names; and when the sky was clear, he spent whole nights in viewing the stars. In 1565 a difference arising between Brahe and a Danish nobleman, they fought, and the former had part of his nose cut off, which defect he so artfully supplied with one made of gold and silver, that it was scarcely perceptible. It was about this time that he began to apply to chemistry, proposing nothing less than the discovery of the philosopher's stone. In 1571 he returned to Denmark, and was favoured by his maternal uncle Steno Belle, a lover of learning, with a convenient place at his castle of Herritzvad, near Knudstorp, for making his observations, and building a laboratory. But having married a country girl beneath his rank, this occasioned such a violent quarrel between him and his relations, that the king was obliged to interpose in order to reconcile them. In 1574, by his majesty's command, he read lectures upon the theory of comets at Copenhagen; and the year following he began his travels through Germany, and proceeded as far as Venice. He then resolved to remove his family, and settle at Basel; but Frederick II. king of Denmark being informed of his design, and unwilling to lose a man who was capable of proving such an ornament to his country,

promised to enable him to pursue his studies, to bestow upon him for life the island of Huen in the Sound, to erect an observatory and laboratory there, and to defray all the expenses necessary for carrying on his designs. Tycho Brahe readily embraced this proposal; and accordingly the first stone of the observatory was laid on the 8th of August 1576. The king also gave him a pension of two thousand crowns out of the treasury, a fee in Norway, and the canonry of Roschild, which brought him in a thousand more. James VI. of Scotland, afterwards raised to the crown of England, going to Denmark in order to marry the Princess Anne, paid a visit to our author in his retirement at Uranienburg, made him several presents, and with his own hand wrote a copy of verses in his praise; but soon after the death of King Frederick he was deprived of his pension, fee, and canonry; upon which, finding himself incapable of bearing the expenses of his observatory, he went to Copenhagen, whither he brought some of his instruments, and continued his astronomical observations in that city, till Valkendorf, chamberlain to the household of Christian IV., by the king's order, commanded him to discontinue them. He then removed his family to Rostock, and afterwards to Holstein, in order to solicit Henry Ranzou to introduce him to the emperor; and that gentleman complying with his request, he was received by the emperor at Prague with the utmost civility and respect. That prince gave him a magnificent house till he could procure one for him better fitted for astronomical observations; assigned him a pension of three thousand crowns; and promised, upon the first opportunity, a fee for him and his descendants. But he did not long enjoy his good fortune; for, on the 24th of October 1601, he died of a retention of urine, in the fifty-fifth year of his age, and was interred in a very magnificent manner in the principal church at Prague, where a noble monument was erected to his memory. His skill in astronomy is universally known, and he is famed as the inventor of a new system, which he endeavoured, though without success, to establish upon the ruins of that of Copernicus. He was very credulous with regard to judicial astrology and presages. If he met an old woman when he went out of doors, or a hare upon the road in a journey, he used to turn back immediately, persuaded that it was a bad omen. When he lived at Uranienburg, he had in his house a madman, whom he placed at his feet at table, and fed with his own hands. As he imagined that every thing spoken by mad persons presaged something, he carefully observed all that this man said; and because it sometimes proved true, he imagined it might always be depended on. A mere trifle put him in a passion; and against persons of the first rank, with whom it was his duty to keep on good terms, he openly discovered his resentment. He was very apt to rally others, but highly provoked if the same liberty was taken with himself. His principal works are, 1. *Progymnasmata Astronomica*, Uranienburg, 1588 and 1589, 2 vols. 4to; 2. *De Mundi Ætherei recentioribus phenomenis*, 1588, 4to; 3. *Epistolarum Astronomicarum libri duo*, Francfort, 1610, 4to; 4. *Calendarium Naturale Magicum*, 1582; 5. *Oratio de Disciplinis Mathematicis*, Copenhagen, 1610, 8vo. His observations were collected by his disciples, and published in 1666 in *Historiæ Cælestis xx. libris*.

It was the friendship of Tycho which formed Kepler, and directed him in the career of astronomy. Without this friendship, and without the numerous observations of Tycho, of which Kepler found himself the depositary after the death of his master, he would never have been able to discover those great laws of the system of the world which have been called Kepler's laws, and which, combined with the theory of central forces discovered by

Huygens, conducted Newton to the grandest discovery which has ever been made in the sciences, namely, that of universal gravitation.

BRAHILOW, or in Turkish IBRAHIL, a city on the northern bank of the Danube, in the province of Wallachia, in European Turkey. It has a strong citadel to defend the passage over the river, which is here divided into several branches. The trade of the place is considerable, both in corn and in preserved sturgeons. It is said to contain, besides the garrison, 12,500 inhabitants. Long. 27. 49. E. Lat. 44. 56. N.

BRAHMAPOOTRA, or BURRAMPOOTER, the largest river in India, which rises on the opposite side of the same narrow range of snow-clad mountains from which the Ganges flows. Its source has never been exactly explored, but it is supposed to be about the 32d degree of north latitude and 82d of east longitude. After winding eastward with a rapid current through Thibet, to the south of the Himalaya Mountains, where it is called Sanpoo, it washes the border of the territory of Lassa, and passes within thirty miles to the south of this capital of the Teshoo Lama. Thence it flows in a widely extended bed, and through many channels, in which is formed a multitude of islands. It receives the Painomtehiu, and many other lesser streams, before it passes Lassa, and penetrates the frontier mountains that divide Thibet from Assam. It then makes a vast sweep, and extending far to the east, until it approaches within 220 miles of Yunnan, the most western province of China, it makes a sudden curve in east longitude 96, first to the south and afterwards to the west, where it enters the province of Assam. Here it receives numerous tributary streams; and in longitude 91° 18' it divides into two great branches, which inclose an island of 120 miles in length. Continuing its course westward, it enters the province of Bengal, near to the town of Goalpara; after which it makes a circuit round the Garrow Mountains; and then altering its course to the south, it is joined by the Megna in latitude 24° 10', in the district of Dacca; and finally unites with the Ganges, about 40 miles from the sea. This great river, including its windings, has a course of about 1650 miles in length. Until 1765, the Brahmapootra was unknown in Europe as a great river, and Major Rennell, on exploring it, was surprised to find it larger than the Ganges. A small portion of the Brahmapootra flows through territories known to Europeans, and its navigation is supposed to be obstructed by cataracts on its entrance into Assam. This great river, during a course of 400 miles through Bengal, in all respects resembles the Ganges, except in one particular, namely, that during the last 60 miles before its junction with the Ganges it forms a stream which is regularly from four to five miles wide, and, but for its freshness, might be considered an arm of the sea. The junction of the two mighty streams of the Brahmapootra and the Ganges produces an immense body of fresh water, such as is only exceeded by some of the great rivers in Africa, which lie entirely within the limits of the tropical rains, or the Amazons and Orinoco in South America. The bore, which is known to be occasioned by the sudden influence of the tide into a river or narrow strait, prevails in all the passages between the islands and sands situated in the gulf formed by the confluence of the Brahmapootra and the Ganges, in a greater degree than in other rivers. (F.)

BRAHMINS, BRAMINS, BRAHMANS, or BRACHMANS, called *ब्राह्मण* by the Greek writers, the name employed to designate that body or order of priests who have always been the sole guardians, preceptors, and ministers of the Hindu religion. It is formed, by a slight modification, from that of Brahma, which is itself a derivative from Brahm, the Supreme Being, indicating the first of the

Brahilow
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Brahmins.

Brahmins. three divine hypostases of the Hindu mythology, the creator of the world under Brahm, and the author of the sacred books called Vedas.

The Brahmins constitute the first or highest of the four *chadi* or castes into which the Hindu nation continues to be divided, as it has been from a very remote antiquity. The origin of this singular division or classification, which prevailed in ancient Egypt as it still does in the peninsula of India, and which was based upon nearly the same principles in both, is hid in the obscurity of ages. Each caste has its peculiar privileges, duties, and laws, all of which are incommunicable and unalienable. The more honourable the caste is, the more numerous are the restrictions to which its members are subjected, and the higher the prerogatives they enjoy. The fourth caste has the fewest observances to follow, but it has also the least portion of respect, and is the most limited in its rights and privileges. Every individual remains invariably in the caste in which he is born; practises its duties as prescribed in the laws relative thereto; and is precluded from ever aspiring to a higher, whatever may be his genius, his virtue, his patriotism, or his courage. The law which determines every man's position in society is immutable; and dreadful are the penalties which await him who ventures to dispense with even the most absurd rules laid down in it. To this point of honour the Hindu patiently sacrifices not only health, but life itself; degradation and infamy await him who transgresses its dictates; yet, although the code of which this constitutes part has been in force for a long series of ages, the people have never (perhaps for this very reason) thought of moderating its rigour or mitigating its oppression.

The leading castes among the Hindus are, as we have already observed, four. These are, first, the Brahmins; secondly, the Kshatriyas, or soldiers, including the princes and sovereigns, and hence sometimes called the caste of Rajahs or Rajeputras; thirdly, the Vaisyas, consisting of agriculturists and shepherds; and, fourthly, the Sudras or labourers. It is with the first of these, however, namely the Brahmins, that we are at present exclusively concerned. This is the sacred or sacerdotal caste, the members of which have maintained an authority more exalted, comprehensive, and absolute, than the priests of any other people, excepting perhaps those of ancient Egypt before the Persian invasion under Cambyzes. According to the received Brahminical tradition, that priesthood originally proceeded from the mouth of Brahma, which is the seat of wisdom, and thus, by the mere fact of their genesis, became invested with an undoubted superiority over the other castes, which sprung from inferior organs or members of the hypostatical creator; as the Kshatriyas from his heart, the Vaisyas from his belly, and the Sudras from his feet. Of the Brahmins there are seven subdivisions, which derive their origin from the seven Rishis or Penitents, the most sacred personages acknowledged by the Hindus. The Rishis are of high antiquity, being mentioned in the Vedas; and they are believed to have occasionally exercised a salutary superintendence over the gods themselves, visiting with their holy displeasure such of the divine impersonations as had been guilty of any irregularity. Their residence was fixed in the remote and elevated regions of the north; and hence the Brahmins of the north are esteemed as the noblest, from their proximity to the great fountain. The Gymnosophists, or Brahmins of antiquity, lived much more secluded than those of modern times, who mingle to a considerable extent in secular concerns. But the latter have made almost no change in their rules of abstinence, their ablutions, and multiplied ceremonies. Their great prerogative consists in being the sole depositaries and expounders of the Vedas or sacred books, four

in number, for each of which there is a separate class or branch of the Brahmins. This prerogative they guard with the most jealous care, affirming, that if a Sudra or other profane person were to attempt to read even the title of these books, his head would instantly cleave asunder; and a Brahmin bold enough to exhibit the sacred volumes to profane eyes would incur the penalty of irretrievable expulsion from his caste. Yet, with much judgment, they make an exception as to the miracle in favour of Europeans; nor has it been found expedient to enforce the law of caste against such Brahmins as may have indulged them with a perusal or even with copies of the Vedas.

The great body of the Brahmins profess to pay equal veneration to the three hypostases of the godhead, Brahma, Vishnu, and Siva. But some attach themselves exclusively to one of these impersonations; while others, admitting the divine emanation of three, exhibit only a preference in their homage, founded on certain fanciful distinctions. Thus Vishnu and Siva, though nominally co-ordinate with Brahma, have long been objects of partiality with individuals who, in virtue of such preference, are formed into sects, distinguished by the name of the hypostasis to which their chief homage is paid. The worshippers of Vishnu are denominated Namadhari, from bearing in their foreheads the mark called Nama, consisting of three perpendicular lines, crossed at the lower extremity by a horizontal one, so as to form a sort of trident; and their dress is of a deep orange colour. The devotees of Siva are denominated Lingamhari, from wearing the Lingam stuck in their hair, or attached to the arm in a tube of gold or silver. The former are notorious for intemperance, and on that account disliked by the people; the latter, for the most part, observe great moderation both in eating and drinking. The devotees of Vishnu account as sacred the monkey, the garuda, and the cobra capella; and any of their number who inadvertently kills one of these animals is obliged to expiate his supposed crime by a farcical sacrifice, in which it is pretended that a human victim is immolated and brought to life again. The mummery of this mock expiation is abundantly ridiculous. A little blood is drawn from a superficial wound in the thigh, inflicted with a knife; the victim is then supposed to be slain, and remains motionless until the farce of resuscitation is performed, when he of course comes to life again. This is performed with immense ceremony, in the presence of a great concourse of spectators, who are commonly feasted on the fine levied from the culprit; and a similar punishment is sometimes inflicted for other offences. The worshippers of Vishnu and Siva, though separated by a very thin wall of partition, are continually at variance, each sect not only striving to exalt their own divinity, but to revile that of their adversaries. The former consider the wearing of the Lingam as the most heinous of all sins; the latter, on the other hand, maintain that all who bear the Nama will, after death, be tormented in hell with a three-pronged fork, resembling that trident mark. But these sectarian notions are less prevalent among the Brahmins than the other castes. Brahmins of the Vishnu faith are only to be found in the provinces situated to the south of the Krishna, and they are regarded with contempt by their more tolerant brethren, who, in consequence, refuse to admit them to their tables or to their ceremonies, and anxiously exclude them from any public employments which happen to be at their disposal. The sects of the Nama and the Lingam are further split into subdivisions, which dispute warmly on the subjects of their differences, but are ever ready to unite when the general interests of the order are concerned.

There are four stages in the life of a Brahmin. The first commences at the age of from seven to nine, when

Brahmins. he is invested with the triple cord, which is suspended from the left shoulder, and forms the badge of his order. The youth thus initiated is denominated Brahmachari. At this stage he is occupied in learning to read and write; in committing to memory portions of the Vedas, and the efficacious forms of prayer called the Mantras; and in acquiring other knowledge. It is his duty to abstain from the use of betel, to put no ornaments in his hair, to bathe daily, and to offer the sacrifice called Homam twice a day; but subjects so young seldom observe the rules strictly. A certain proficiency, indeed, is enjoined in committing to memory the sacred books; but neither in this nor in the acquisitions which are deemed scientific is there much emulation. They are not slack, however, in learning to understand the privileges belonging to their caste, which are great and various. One of these is a right to ask alms, which they do not in the style of mendicants, but in that of confident yet not insolent claimants; another is, an exemption from taxes of all kinds, whether general or local; and a third consists in an immunity from capital, and generally from corporal punishment, however heinous the crimes they may commit, imprisonment being the only penalty to which they are liable. At this stage also they learn the different points of bodily purity which, as good Brahmins, it is necessary for them to observe through life. These are so numerous as to be excessively burdensome, and to impose on them the duty of constant and jealous vigilance. Not only are they defiled by touching a dead body, but even by attending a funeral. Child-birth and constitutional changes render females impure; and certain ablutions and forms of prayer are necessary to remove the stain. An earthen vessel, if it has been used by a profane person, or applied to certain specified purposes, becomes so polluted that it cannot be used again, and must be broken; but metallic vessels may be purified by washing. Leather and all kinds of skins, except those of the tiger and antelope, are held to be excessively impure; and the boots and gloves of Europeans are to them the most disagreeable of all articles of dress. Brahmins, in walking or sitting, must take care they do not touch a bone, a broken pot, a rag, or a leaf from which any one has eaten; in drinking, they must pour the liquid from above, without touching the vessel with their lips; and they are forbidden to touch the greater part of animals, particularly the dog, which is accounted the most polluting. The water which they drink must be carefully drawn, though never by a Sudra; and if two Brahmins draw water together, their pitchers must not come in contact, otherwise one or both must be broken. Animal food of all kinds is strictly prohibited; and among the Lingam branch of the order the prohibition is most rigidly observed, notwithstanding which this class or sect has always been remarkable for great slovenliness in their external habits. The Brahmins are also taught to entertain a horror of spiritual defilement, resulting from perversity of will, or the actual commission of sin; and although the different modes in which it is contracted are but obscurely indicated, the rules for purification by means of ablutions, penances, and ceremonies, are very fully and distinctly laid down.

The second stage of a Brahmin's life is the state of Grihastha, which takes place when he is married, and has children; both these circumstances being essential to its constitution. Marriage is an important object to a Brahmin, inasmuch as it insures him consideration and respectability in society. Hence, when he becomes a widower, he falls from his station, and is consequently under a moral necessity of re-entering the married state. But the case is quite different with widowed females, who are not permitted to marry a second time. The Sunnyassis, how-

ever, probably in imitation of the ancient Rishis, lead lives of celibacy; and the acting priests, called Gurus, also live in a state of single blessedness, although their morality in this particular is sufficiently relaxed. When a Brahmin, therefore, takes his wife home and has children by her, he enters his second state, or that of Grihastha. His daily duties and ceremonies now become more multiplied and imperative; and every act of his life must be performed according to certain rules, some of them sufficiently repugnant to European notions of propriety. These observances, which from their number and incessant recurrence would seem burdensome and oppressive, become so habitual from daily practice that they are not felt as galling or irksome. On the contrary, the Brahmins perform all of them cheerfully, and no innovation is ever proposed. Some Hindu writers, indeed, have turned them into ridicule, and joked at the expense of a ritual which they nevertheless continued in practice to observe. But, from all that we can learn, the authors who have indulged in this license were never Brahmins, but generally Sudras, or men of the lowest caste, who had been contaminated by association with Europeans. Vemana, Agastya, Patanapulai, and Tiruvaluven, a Pariah, the principal scoffers, answer to this description; they are all modern, and either Sudras or men of no caste whatever. If any ancient authors wrote in the same strain, their names and their works have equally perished. At the same time, although speculative scepticism be but rarely avowed, practical transgressions are secretly indulged in, especially in large towns, where concealment is easy and temptation strong.

Nor is this all. Many Brahmins habitually engage in transactions and employments which appear altogether at variance with their professions and pretensions. They are commonly the political functionaries or agents of the native princes, and of the Mahomedan governments, which find it convenient to employ these hereditary ministers of religion, from the influence they possess over the minds of the people. Some of them, particularly in Gujerat, embark in commercial speculations, and become merchants, bankers, or general agents. Others, again, carry messages between distant places, or are sent as vakeels on difficult and important missions; the veneration in which they are universally held securing them from molestation in the discharge of such tasks. A third class act as coolies or porters, in which character they alone are exempt from the demands of the tax-gatherer. Many of them enter the Company's native army, and often rise to the rank of subadar. In a word, they are as much alive to selfish considerations and interests as any other tribe or caste, and ready, on all occasions, to avail themselves to the utmost of the privileges and immunities belonging to their order. Their rapacity, in fact, is only exceeded by their cunning; nor is there to be found in any country a set of more artful impostors. The Hindus are all expert in disguising the truth; but the Brahmins, in this respect, possess an unquestioned superiority. They are supple, insinuating, false; acute in discerning, and skilful in taking advantage of the foibles of others; naturally vindictive and proud, yet, from habit and cunning, patient and submissive; evincing on all occasions the most perfect self-command, and ever ready to profit by the indiscretion, weakness, or simplicity of those with whom they may have to do. One of their prime resources is flattery, which they lavish with unbounded profusion on any person whom they wish to cozen or hope to conciliate; experience having convinced them, that even those who pretend to repudiate their adulation nevertheless lay a portion, at least, of the grateful unction to their souls. In matters of religious opinion they are upon the whole tolerant; they almost never anathematize Moslems, Christians, and others of different creeds; nor

Brahmins. do they seem to be at all actuated by the fierce spirit of proselytism and persecution. But this forbearance may perhaps be the consequence, not of any virtue in the Brahmins, but of the low estimation in which they hold the objects of their own worship; for, undoubtedly, they sometimes treat the latter with an indifference bordering on contempt, and in their adorations are influenced by their secular interests rather than by the spirit of devotion, flattering those divinities whose functions they connect with their worldly affairs, and giving themselves no concern about the others.

The distance at which they keep themselves from Europeans, and the unwillingness they evince to admit the latter to their temples or their ceremonies, may seem inconsistent with what has just been advanced. But their conduct in this respect arises solely from the uncleanness which they attach to our habits; and were Europeans to conform a little more to their manners and practical prejudices, there can be no doubt that the consequence would be a closer intimacy and unbounded toleration. This was fully experienced by the Abbé Dubois, who having carefully studied the manners of the Hindus, and uniformly treated their habits with respect and tenderness, was often invited by the Brahmins of his acquaintance to enter their temples and join in their ceremonies. Among the sacerdotal order of India it is a prevalent sentiment that different religions are formed for different nations, and that each serves every necessary purpose to the souls of its believers and professors. But in their attachment to their civil institutions the Brahmins are less liberal and conciliating, considering every thing different from these or opposed to them as the product of absolute barbarism. The Moors they hate for their arrogance, and despise for their ignorance of some branches of mathematical science known to themselves, such as those connected with the construction and explanation of the almanack. In the European masters of India, they admire their humanity in war, the moderation and impartiality of their government, the general uprightness of their conduct in the intercourse of life, and the benevolent generosity of their dispositions; but these favourable impressions are apt to be forgotten when they think of the grossness and hatefulness of their prevailing habits, such as eating animal food, and admitting the detested Pariahs into their domestic service. Such things are pre-eminently odious to Hindus, and both, we think, might have easily been avoided. No extraordinary effort of self-denial would have been necessary to enable Europeans to abstain from the use of beef, which is an insipid food in India; and, with regard to the Pariahs, although it would undoubtedly be wrong to countenance the Brahmins in their barbarous treatment of the inferior castes, and of those who are considered as of no caste, yet regulations might have been adopted by which men of high caste would have been spared the gross insults they are at present exposed to, and every humane purpose at the same time attained.

The third state of a Brahmin is denominated Vanaprastha, or that of inhabitants of the desert. The order of Brahminical anchorites prevailed at a former period, but it is now scarcely to be found, and appears to be very nearly, if not altogether, extinct. The members of it were usually styled Rishis, or Penitents. They were honoured by kings, and respected by the gods, who, on account of the odour of their sanctity, seem to have considered them as in some degree their superiors. They practised self-denial according to certain rigid rules, and performed peculiar sacrifices and religious observances. Their pious acts and intentions were often thwarted by giants, and even by gods, who seem to have had no relish

for the severe discipline of the order; but in the end the Brahmin Penitents always prevailed, and sometimes took the gods roundly to task for their misdeeds. They were the depositaries of the more sublime doctrines of theology, and practised magical incantations.

The fourth state of a Brahmin is called Sunnyassi, and is reckoned so pre-eminently holy that, in a single generation, it imparts a greater stock of merit than could be accumulated during ten thousand in any other sphere of life. As a natural consequence, when a Sunnyassi dies, he is believed to pass at once into the region of Brahma or Vishnu, exempt from the penalty of being re-born on earth, or animating in succession different bodies, conformably to the metempsychosis of the Hindu mythology. In preparation for this state, a Brahmin performs all the rites of the Vanaprastha, and in addition renounces every worldly connection, takes up the profession of mendicity, and lives solely by alms. He must previously, however, have devoted several years to the married and paternal state, and thus discharged the debt which he owed to his forefathers. When duly qualified and disposed for entering the holy state of Sunnyassi, he is installed as such with many Mantras and other ceremonies. His duties now increase in number and severity. He must every morning rub his whole body over with ashes, restrict himself to one meal a day, give up the use of betel, avoid looking at women, shave his beard and head every month, and wear wooden clogs on his feet; in travelling, he must carry his seven-knotted bamboo staff in the one hand, his gourd in the other, and the antelope skin under his arm, in other words, display the three badges of his order; and he must erect a hermitage on the bank of a river or a lake. Contemplation, and a supposed communion with the Deity, amounting in its highest form to a participation of the divine essence, constitute the ulterior duties of this class of devotees. Need we wonder that, being thus privileged to indulge in all manner of extravagances, and to give full swing to an excited imagination, their practices should be in the highest degree preposterous, and their fantasies equally wild and ridiculous? In fact, the tricks which they perform are endless. The highest act of merit among them is "to subdue all sensation, and retain the breath with such determined perseverance, that the soul, quitting the body, bursts through the crown of the head, and flies to re-unite itself with the Great Being, or Para-Brahma." Accordingly, one of their fantastical exercises consists in suppressing their breath as long as possible, till they almost swoon away, and bring on most profuse perspiration. Another consists in putting themselves in the most irksome and ridiculous postures, and remaining so for a considerable length of time, indeed till exhaustion or decrepitude ensue. To stand on one leg till it swells and ulcerates; to stand on the head till the brain becomes disordered, and delirium ensues; to keep one arm extended aloft in the air till the muscles become rigid, and the power of withdrawing it is lost for ever; such are among the most approved practices of the Sunnyassis. But still the most extravagant and fatal efforts of these extraordinary devotees seem to have been confined to former times. We may add, that the Sunnyassis are not, like the Vanaprasthas, burned when they die, but interred. This is the case with the Lingamhari, or worshippers of Siva; but a Sunnyassi, even although he had, during life, attached himself to the worship of Vishnu, is interred when dead, and the ceremony is both pompous and expensive.

From the classes of Vanaprastha and Sunnyassi have sprung numerous sects of fanatics, such as the Djogis, who seek to propitiate the Deity by mutilating their bodies, or braving the force of fire and the inclemency of the seasons; the Panduris, who carry about small figures of the

most indecent description, as provocatives to devotion; and the Vairagis, who form a kind of mixed order of monks and nuns, consecrated to the god Krishna and his mistress Rada, whose history they celebrate in songs, accompanied with the tinkling of cymbals. It is also said that some of the Brahmins, under the denominations of Pashandias and Sarwaginas, maintain libertine and atheistical opinions; and it is probable that the number of those who secretly cherish such sentiments is much greater than that of the class or sect which openly avows them. Superstition, when sustained neither by fanaticism nor enthusiasm, is the natural parent of that infidelity by which it is ultimately undermined.

From what has been stated in the course of this exposition, some idea may be formed of the general character of the sacerdotal caste in India. According to the best authorities on the subject, the number of Brahmins who are respectable for their knowledge and their virtue is exceedingly small; whilst the great majority of these hereditary priests is completely devoted to ambition, intrigue, and voluptuousness, and disgraced by an avarice, a meanness, and a cruelty, which inspire strangers with no sentiments towards them but those of contempt and aversion. The charity which they place so high in the scale of duties and virtues, being equally confined by the law of caste, and the operation of that intense selfishness by which the whole tribe is characterised, has no human beings except Brahmins for its objects. Towards the other castes they cherish no feeling of humanity, and cautiously abstain from any reciprocation of kindness; they exact every thing in virtue of their rank, functions, and pretended sanctity, but take care to give nothing in return. Instead of the retired and contemplative life which appears to have been observed by the order in ancient times, and to which they still profess to devote themselves, they are immersed, as we have already seen, in pursuits the most foreign to and inconsistent with the duties and character of a priesthood; and, accordingly, they have declined alike in dignity, in reputation, and in knowledge. Yet their influence as a body still remains unshaken; neither the violence of conquest, nor the shock of revolution, nor even the power of time itself, appears to have sensibly impaired their dominion over the minds of the other castes. The institutions to which they owe their ascendancy, and by which it will in all probability be maintained for ages yet to come, have struck their roots so deeply, and become so intimately identified with the genius, character, habits, sentiments, feelings, prejudices, and daily usages of the people, as to resist the operation of all those natural, moral, and political causes which bring about changes in other countries, and, amidst all the evils incident to convulsions and innovations, ultimately contribute to the general advancement. In India, society appears to have been arrested at a particular stage of its natural progress, and re-constituted so as never to exceed the limit which it had attained before its onward tendencies were paralyzed, and the characteristic of immutability firmly established. Hence it may be considered as forming what the schoolmen would probably have denominated a political *nunc stans*; as standing to other communities of men in nearly the same relation that eternity bears to time: and hence, also, the permanency of an influence which the possessors of it take no means to extend or improve, in the conviction that it can never be materially abridged.

The authenticity as well as the antiquity of the sacred books of the Brahmins has been alternately asserted and denied, with equal zeal and pertinacity. Without entering into this question, however, it may be satisfactory to show of what materials these writings really consist; for if they are utterly worthless and contempt-

ible in themselves, as indeed seems to be the case, it matters but little to inquire whether they be genuine or spurious, of ancient or comparatively modern origin. And, on this subject, we prefer citing authorities to delivering any opinion of our own. "The sacred writings of the Brahmins," says an able writer in the *Quarterly Review*, "have been long mentioned with those phrases of solemn wonder, which would still have misled the public, if the translations and extracts of them which have successively appeared had not discovered their puerility and imposture. It is therefore important that the Sanscrit books, which have been held up as so sacred and so ancient, and which some of our learned Orientalists obviously prefer to the Jewish historian, should be given to Europe in the languages familiar to every one; that we may not be blinded by the erroneous admiration of credulous and misjudging enthusiasts, but be enabled to criticise fairly, and judge impartially for ourselves." (Vol. ii. p. 68.) Mr Mill, speaking of Sanscrit poetry generally, pronounces a judgment still stronger than that delivered by the Reviewer. "These fictions," says he, "are not only more extravagant and unnatural, less correspondent with the physical and moral laws of the universe, but are less ingenious, more monstrous, and have less of any thing that can engage the affection, awaken sympathy, or excite admiration, reverence, or terror, than the poems of any other, even the rudest people, with whom our knowledge of the globe has yet brought us acquainted. They are excessively prolix and insipid. They are often, through long passages, trifling and childish to a degree which those acquainted with only European poetry can hardly conceive. Of the style in which they are composed, it is far from too much to say, that all the vices which characterise the style of rude nations, and particularly those of Asia, they exhibit in perfection. Inflation, metaphors perpetual, and those the most violent and strained, often the most unnatural and ridiculous, obscurity, tautology, repetition, verbosity, confusion, incoherence, distinguish the Mahabharat and Ramayan." (*History of British India*, vol. ii. p. 46.) The following passage, extracted from a most masterly article which appeared in the *Edinburgh Review* (vol. xv. p. 175), is, if possible, still more to our present purpose. "It may be said," the Reviewer observes, "that in a country of which the actual condition is so imperfectly known, investigation should first be directed to the existing state of society, which admits of being accurately ascertained, and may lead to practical conclusions highly beneficial to the community, before we attempt to explore the obscure paths of remote antiquity, by the feeble lights afforded by a few mutilated or suspicious documents. The Indian nations, it may be contended, have no claim to any extraordinary attention, either from the philosopher or the historian: their boasted civilization has rather been asserted than proved; neither their literature nor their arts indicate any considerable progress in the pursuits which refine and adorn mankind; and some of their customs betray a ferocity scarcely to be found amongst the most savage nations. But, even admitting that it would be desirable to trace the remote revolutions which this people have undergone, the little probability of attaining any deductions which may be relied on with confidence ought to induce us to relinquish so hopeless a task. The Puranas appear to be extravagant romances, which, however amusing as poetical compositions, can furnish no additions to authentic history, whatever portion of it they may be supposed incidentally to contain. When we find gods and heroes mingling in doubtful fight; events natural and supernatural succeeding each other indifferently; a fact probably historical, followed by another evidently allegorical; the only rational conclusion is to consider the whole of these poems

Brahmins. as works of imagination, and to appreciate their merits by the rules applicable to similar compositions amongst other nations. But if such be the judgment we must pass on the Puranas, the Hindu compositions of a later date are not better entitled to attention, unless with respect to poetical excellence: and it probably may be affirmed that the Hindus cannot produce a single historical composition; whilst the Mahomedans of the same country have amply, and even ably, illustrated all the events subsequent to their entrance into Hindustan."

Such are the judgments which have been pronounced by some of the ablest writers of our time, respecting the sacred writings of the Brahmins, and the impossibility of deducing any sound or rational conclusions from these fanciful and extravagant compositions. But, on the other hand, it has been contended, with much plausibility and some degree of justice, that an indiscriminate accumulation of facts is no object with the philosopher, and only a subordinate one with the historian; that in proportion to the peculiarity and reputed antiquity of the religious and civil institutions subsisting amongst any people, it is natural to feel curiosity as to their origin; that the minute peculiarities which discriminate the nations of Europe scarcely produce any sensible modification of character, or exhibit to our observation any beings whose manner of thinking and acting is materially different from our own; that, in order accurately to appreciate the efficacy of religious dogmas and civil institutions in modifying the character of a people, our observation should be particularly directed to those nations which, in these respects, differ most widely from ourselves; that to this source may be traced much of the instruction as well as amusement derived from a perusal of the classic compositions of antiquity; that, from the same cause, the manners of savage tribes have attracted and deserved the attention of the philosopher, although these are in general extremely uniform, and little modified by any other circumstance than the greater or less facility of obtaining food; that, nevertheless, it is not amidst a people in such a stage of society that the influence of moral impressions can be accurately ascertained; that a nation must have advanced some steps in civilization, must have cultivated the arts, and been tinged with science, before it becomes susceptible of that indelible stamp which defies the efforts of time; and that if, upon these grounds, the peculiarities of the Hindu institutions, opinions, and manners, deservedly render them the object of philosophic research, the gradations by which such a state of society was attained must be highly interesting, and can only be discovered through the medium of such literary monuments as are still extant among them. Their sacred books, therefore, must ever possess a value, independent of all that may be said of their contents, or objected to the antiquity claimed for them. They embody evidence of the existence of peculiar modes of thinking, and forms of belief, as well as of the effects produced by peculiar institutions, civil and religious; and, as such, they can never cease to be regarded with interest, both by the philosopher and the historian.

Of ancient Brahminical science the principal remains are their astronomical tables and trigonometrical methods, both of which have given occasion to frequent and learned discussion in this and other countries of Europe. At present, however, we can only refer the reader to the works of Bailly, Playfair, and Delambre, in which he will find the subject treated with equal learning, ingenuity, and scientific precision, though in opposite views, and with very different aims. As to the science of the modern Brahmins, it seems, as we have already remarked, to be confined to the construction and explanation of the almanack; and even this scanty amount of knowledge is the

portion of but few of their number. They have indeed fallen from the proud eminence which was occupied by their order when the sages of Greece travelled into India to learn wisdom in that great storehouse of knowledge, and afterwards to carry it back to their own country, in order to plant there the first seeds of civilization. But there is one species of learning for which they have always evinced a singular aptitude and inclination; we mean metaphysical speculation, which possesses many attractions to men remarkable alike for the indolence of their habits and the extreme subtilty of their genius. In this department of research they had accordingly explored the whole cycle of systems, distinctions, classifications, refinements, and doubts, long before the western world had emerged from primeval barbarism; and in India the human mind had exhausted itself in endeavouring to detect the laws which regulate its own operations, when the philosophers of Greece were only beginning to enter within the precincts of metaphysical inquiry. Nor is it by any means certain that the latter are entitled to the credit they have received on the score of originality; that they did not borrow rather than invent; and that to the Gymnosophists of India belongs the honour of framing those systems which have been, perhaps too hastily, attributed to their disciples. It is even doubtful whether Aristotle himself did not derive both the materials and the arrangement of his system of logic from the same source. In a Mahomedan history, quoted by Sir William Jones, it is expressly mentioned that Callisthenes, having procured a regular treatise on logic, somewhere in the Punjab, transmitted it to Aristotle; and although this does not certainly prove that the Greek philosopher adopted as his own the system which had been sent him by his pupil, it at least warrants a conjecture that he might have done so; more especially as the syllogistic method was undoubtedly known in India long before his time, and as the fact must have been discovered by the numerous learned and accomplished men who accompanied Alexander's expedition. But be this as it may, one thing is pretty certain, that there is scarcely a hypothesis advanced by metaphysicians in ancient or modern times, which may not be found in some of the Brahminical writings. In these we meet with materialism, atomism, pantheism, Pyrrhonism, idealism, and every other fanciful variety of opinion which has yet been imagined or promulgated respecting God, the world, and the human soul. The Brahmins could boast of their Spinozas, their Berkeleys, and their Humes, long before Alexander dreamt of passing the Indus, and erecting a throne on the banks of the sacred stream. That Pythagoras borrowed from them the greater part of his mystical philosophy, his notions respecting the properties of numbers as expressive of physical laws, his doctrine of the transmigration of souls, and the arguments by which he inculcated the unlawfulness of eating animal food, seems to admit of no doubt whatever; for all these things are of the very essence of Brahminism, and are to this hour taught and enforced by the sacred order in India.

Egypt and India, as we have already observed, are the only two countries in which the institution of castes has obtained in its most rigid form. This identity is of itself sufficiently remarkable; but there are other points of resemblance which we think even more striking. In ancient Egypt the cow was a principal object of religious adoration, and as such accounted peculiarly sacred; and we need scarcely add that, in India, the same superstition has prevailed to an equal, if not greater extent, ever since the introduction of the Brahminical religion. The Egyptians worshipped Apis or the sacred bull, and the figure of this animal forms part of every hieroglyphical inscription, either as a symbol or a phonetical character. In some of their festivals the Brahmins exhibit the same species of idolatry,

Brahm with rites and observances exactly similar to those anciently practised in the country of the Pharaohs; and, judging by the inscriptions on their monuments, this type of animal worship must have prevailed in India from the earliest times. The astronomical character of the Egyptian mythology is well known to those who have studied its details; it seems to have been merely a reflex image of Tsabaism, or the worship of the host of heaven, the form of idolatry which first obtained among "the world's gray fathers" in the regions of the East. But the same thing, in the same sense, may be predicated of the Hindu mythology, in its purest form, before it was overlaid with the monstrous and fantastical inventions of a juggling priesthood. What inference, then, ought we to deduce from these and numerous other facts of a similar description which might be mentioned? Did Egypt derive its superstitions from India, or has India borrowed its mythology from Egypt, or have both drawn from a common source? Which is the original and which the copy, or are both merely copies from an original no longer extant? These are questions to which, in the present state of our knowledge, it is difficult, if not impossible, to give a satisfactory answer; although speculation has been busy on the subject, some contending in favour of Egypt, others in favour of India, and others, again, seeking a common source in that intermediate region, which formed as it were the cradle of the human race. We have no intention whatever to enter into these disputations, or to hazard conjectures respecting a subject in regard to which no safe or certain data have as yet been obtained. We may nevertheless be permitted to observe, that the question is chiefly one of pure chronology; that on this subject much still remains to be done before we can arrive at any well-founded conclusion respecting the comparative antiquity of these ancient nations; but that, in as far as we are at present able to see our way, the balance of probability appears to incline pretty decidedly in favour of the country of the Pharaohs.

See Abbé Dubois, *Description of the Character and Customs of the People of India*, English translation; Malte-Brun's *Universal Geography*, vol. iii. English translation; Maurice's *Indian Antiquities*; Asiatic Researches; Colonel Kennedy's *Researches into the Nature and Affinity of Ancient and Hindu Mythology*; *Religion of the Brahmins*; Ayeen Akberry; Dow's *Hindustan*, preliminary dissertation; *Institutes of Menu*, translated by Sir William Jones; *Quarterly Review*, vol. i.; *Edinburgh Review*, vols. x. and xv.; Klaproth's *Asia Polyglotta*; Kennedy's *Origin and Affinity of Languages*. (A.)

BRAHOOICK MOUNTAINS, a chain of mountains so called by Colonel Pottinger, from the Brahooes, who inhabit them. They run along the eastern frontier of Persia, and extend 280 miles in length from south-east to north-east, and about 200 miles in their utmost breadth, under latitude 28. N. This range of mountains springs abruptly to a conspicuous height and grandeur, out of the sea at Cape Mowaree, in longitude 66° 58' E. latitude 25° N., whence it assumes a north-easterly direction for ninety miles. It there projects a ridge east by north, the base of which is washed by the river Indus, at the foot of Sehwan. From the separation of this chain, in latitude 25° 45', to that of 30°, the primitive body runs due north, now marking the western limits of Sindé, Kutch Gundava, and a part of Sewestan, as it formerly did that of Hindustan. It thence once more regains its original inclination to the north-east, and decreases in elevation so rapidly, that in the course of forty miles it sinks down to a level, and becomes incorporated with the hills inhabited by the Kaukers and by other Afghan tribes. To the westward the Brahooick Mountains are far more complicated. At their

emergence from the ocean their breadth does not exceed thirty miles from the one base to the other; but from the latitude of twenty-five and a half degrees, they progressively sweep round to north, north-north-west, north-west, and west-north-west, expanding over several degrees of longitude, and sending forth many collateral chains. The main range stretches away towards the north, to the twenty-eighth degree of north latitude, where it meets the sandy desert about the sixty-fourth degree of east longitude; it afterwards sinks, like the eastern front, to an equality with the Afghan hills, among which it is lost. This chain of mountains reaches in some parts to a great altitude, and has many peaks covered with snow. (Pottinger's *Travels in Beloochistan and Sindé*.) (F.)

BRAINTREE, a market-town in the hundred of Hinkford and county of Essex, 40 miles from London. It was the first seat of the baize manufacture introduced into England by the Flemings in the reign of Elizabeth, but that trade is nearly altogether removed to the north of England. It is situated in a very beautiful and fertile district, and a silk manufactory has recently been established. There is a market on Wednesdays. The inhabitants amounted in 1801 to 2821, in 1811 to 2298, and in 1821 to 2983.

BRAKEL, a circle in the Prussian government of Minden and province of Westphalia. It extends over 134 square miles, or 85,760 acres, and contains five cities, thirty villages, and fifteen hamlets, and a population of 21,201 persons. It is well cultivated and fertile. The dense population finds employment in making the coarse linen well known by the name of paderborns. The chief town has the same name as the circle, is situated on the river Brucht, and contains 380 houses, with 2550 inhabitants.

BRAMA, or BRUMA, a pagan deity of the East Indies. See BRAHMINS.

BRAMAH, JOSEPH, a practical engineer and machinist, was born at Stainborough, in Yorkshire, on the 13th of April 1749. His father rented a farm on the estate of Lord Strafford; and, being the eldest of five children, he was intended for the same employment. He exhibited at a very early age an unusual talent for the mechanical arts, and succeeded, when he was quite a boy, in making two violoncellos, which were found to be very tolerable instruments; as well as in cutting a single block of wood into a violin, chiefly by means of tools which were forged for him by a neighbouring smith, whom, at a subsequent period of his life, he induced to assist him in London as one of his principal workmen. Notwithstanding the ingenuity which he had thus displayed, his destination in life might have precluded its further cultivation, had he not, fortunately for himself and for the public, been incapacitated, when he was about sixteen, by an accidental lameness in his ankle, for the pursuit of agricultural labour. He was then apprenticed to a carpenter and joiner, who seems, however, to have contributed but little towards his improvement in mechanical knowledge.

When the term of his engagement had expired, he obtained employment for some time in the workshop of a cabinet-maker in London, and soon after established himself as a principal in that business. Another accidental confinement left his mind at liberty for a time to occupy itself with reflection and invention; and he employed his involuntary leisure in the improvement of some of the most humble, but not the least useful, of domestic conveniences. He obtained a patent for his inventions, and established a manufacture of these and other similar articles in Denmark Street, Soho, where he continued to simplify and improve the arrangement of the pumps and pipes subservient to his principal purpose. He procured in 1783 a patent for a water-cock, intended to allow the

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Bramah. fluid a more uninterrupted passage through it than was practicable in the ordinary construction. He afterwards removed to Piccadilly, and established the various branches of his manufactory in some extensive premises at Pimlico.

In 1784 Mr Bramah took out a patent for his improvement in locks, which certainly appear to be of very material importance. Their peculiar character depends on the arrangement of a number of levers or sliders, in such a manner as to preserve, when at rest, a uniform situation, and to be only pressed down by the key to certain unequal depths, which nothing but the key can ascertain; the levers not having any stop to retain them in their required situation, except that which forms a part of the key. The construction is more particularly detailed in the specification of the patent (*Repertory of Arts*, vol. v. p. 217), as well as in the inventor's *Dissertation on Locks*, 8vo; and some additional modifications, allowing the key to be varied at pleasure, are described in a patent, dated in 1798. It is not easy to say why the application for an act of parliament to prolong the privilege proved unsuccessful, unless it was supposed that the inventor had been already sufficiently remunerated for the share of ingenuity which his contrivance exhibited; but the report, that one of these locks had been readily opened, before a committee of the House of Commons, by means of a common quill, was a gross misrepresentation of the fact; the quill having in reality been previously cut into the required shape from the true key. The experiment, in fact, only served to show the perfection of the workmanship, so little force being required to overcome the resistance when properly applied.

For different modifications of pumps and fire-engines Mr Bramah took out three successive patents, the two last being dated in 1790 and 1798. (*Repertory*, vols. ii. iii.) His "rotative principle" consists in making the part which acts immediately on the water in the form of a slider, sweeping round a cylindrical cavity, and kept in its place by means of an eccentric groove; a construction which was very possibly suggested by his own inventive mind, but which had been before described, in a form nearly similar, by Ramelli, Cavalleri, Amontons, Prince Rupert, and Dr Hooke. The third patent related chiefly to the attachment of a considerable reservoir of water to the fire-engine in a cylindrical form, and to the furnishing of it with wheels of its own, of a proper size and strength to allow it to be conveniently worked.

There was somewhat more of originality in the idea of applying practically, to the purpose of a press, the well-known principle of the hydrostatic paradox, by which, as by a lever with arms capable of infinite variation, the smallest imaginable weight is made capable of holding in equilibrium a force incomparably greater. Mr Bramah's patent for the invention is dated in the year 1796 (*Repertory*, vol. vi. p. 289), and it has been one of the most successful of his numerous speculations. He added to it, in a subsequent patent, the contrivance of a "retainer," for keeping goods in a constant state of pressure for an unlimited time after their removal from the press. The apparatus has certainly a considerable advantage in the great steadiness with which the force can be applied, in the facility with which it can be regulated, and the convenience with which it can be continued without alteration; and it has been extensively applied, both on a small and on a large scale, for copying writings, for pressing gunpowder, for proving cables and chains, for raising weights of various kinds, and for drawing piles, and pulling up trees by the roots.

A simple but a very convenient arrangement of little pumps and pipes has been very generally employed in public-houses under the name of the beer-machine: for this Mr Bramah took out a patent in 1797, describing it

as part of an apparatus for retaining, drawing, and clarifying liquors (*Repertory*, vol. ix. p. 361). He prefaces his specification with some general observations on the right of an inventor to a property, both in the objects which he selects for his improvements, and in the means which he employs for the attainment of them; and demands of the public justice an ample security for both these rights, grounding this claim on his resolution to make a clear and unreserved disclosure of all his inventions. Besides the method of pumping up the liquors from the various casks through flexible pipes, without the necessity of entering the cellar, he describes a mode of converting every cask into a forcing pump, excluding the air, and raising the liquor to any part of the house, by a load on its head, which is to be converted into a piston. He mentions also a filtering machine, a vent peg, a method of making pipes, and a new form of stop-cocks.

In 1801 he obtained a patent for some improvements in the construction of steam-engines, particularly relating to the boilers; and in 1802, one for a very elaborate and accurate machine for producing smooth and parallel surfaces on wood and other materials. The tools of different kinds employed in this machine, such as gouges, spokeshaves, and planes, are carried with a considerable velocity by a rotatory motion, and come successively in contact with the wood, which is placed on a movable carriage gradually advancing. The centre or gudgeon of the axis or shaft, instead of a common step, is supported by a barrel of oil, to which it is fitted by a collar; and this arrangement not only diminishes the friction very considerably, but allows the height of the shaft also to be very easily and accurately regulated by means of a small forcing pump. The inventor thinks this liquid support likely to be as permanent as it is advantageous; but it may be apprehended, that the constant friction of such a collar would cause it to require frequent repairs, in order to prevent the escape of the oil so powerfully compressed. The machine has been erected on a large scale in the arsenal at Woolwich, and is employed with perfect success. The specification includes the description of a mode of turning spherical surfaces, either convex or concave, by the simple contrivance of a tool, movable on an axis precisely perpendicular to that of the lathe; and of cutting out concentric shells, by fixing, in the same manner, a curved tool, nearly of the same form as that which is employed by the common turners for making wooden bowls.

An improvement in the processes for making paper, with the assistance of new machinery, in large sheets, was secured to the inventor by a patent in 1805 (*Repertory*, second series, vol. viii. p. 1). The description is accompanied by that of a mode of drying the paper on sliding frames, hung on lines like sashes, and of keeping it in a state of compression by retainers adapted to the hydrostatic press; but Mr Bramah had not leisure to introduce these arrangements into actual practice, although he had been at a considerable expense in preparing the apparatus.

His next invention was, however, very effectually carried into execution in a particular department, notwithstanding its unpromising appearance, as generally stated in the specification of the patent, which he obtained in 1806 (*Repertory*, second series, vol. x. p. 329). He proposes to facilitate the process of printing by means of a roller, composed of a number of circular plates, closely fitted together, and turning on the same axis, each bearing twenty-six letters, with figures, spaces, and various marks, either engraved or projecting, and capable of being shifted at pleasure, so as to express any single line by a proper combination of the plates. This is described as a substitute for common printing, copperplate engraving,

and calico printing; and the ink is intended to be supplied by a trough fixed above, and in contact with the cylinder. Now it is obvious that such a machine would be insufferably tedious and inconvenient for every purpose of common printing, which it would be scarcely possible to perform by its means; but when we discover that the inventor had probably in view the apparatus which he constructed the next year for the Bank of England, for numbering and dating their notes, we shall be aware that the means were admirably adapted to the end; a single line only being here wanted at once, in which a single figure was to be changed at each step, and that in a regular order. In fact, during the immense temporary circulation of one and two pound notes, the Bank has been able, by this machinery, under the management of about twenty clerks, to perform the labour of 120, who were before required for the purpose.

Mr Bramah procured a patent in 1809 for a mode of making and holding pens for writing, calculated to save the substance of the quill, by cutting a number of pens out of it, instead of a single one; and those who are not in the habit of making their own pens may often find a convenience in the portable form in which this and other similar "pterophori" are arranged. In 1812 he brought forward his patent for the construction of main pipes, to be carried through the principal streets of a metropolis, of sufficient thickness to withstand a great force, to which the water within them is intended to be subjected, by proper pumps, furnished with air-vessels; so that the water may not only be ready for the immediate extinction of fires, without the necessity of bringing an engine to the spot, but may also furnish a convenient moving power for various mechanical purposes, such as raising weights, by means of tubes sliding out of each other, like those of a telescope. He observes that he has frequently had occasion to employ a hydrostatic pressure, in many of his operations, equivalent to that of a column of water 20,000 feet high, which is about four tons for every square inch. He also asserts that he can form 500 tubes, each five feet long, capable of sliding within each other, and of being extended, in a few seconds, by the pressure of air forced into them, to a length of 2500 feet; and, with a power of this kind, he seems to have imagined that he could raise wrecks, and regulate the descent of weights of various descriptions.

His improvements in wheel-carriages, for which he obtained a patent in 1814, consisted in fixing each wheel to a separate movable axis, having its bearings at two distinct points of its length, but loosely inclosed between these points in a cylinder filled with oil; and, in some cases, he proposes to fix the opposite wheels to the same axis, though with a power of turning very stiffly round it, in order to lessen the lateral motion of the shafts in very rough roads. He also suggests the use of pneumatic springs, formed by pistons, sliding in cylinders, as a substitute for common springs of metal.

The purpose of Mr Bramah's last patent was the prevention of the dry rot, by laying on the timber meant to be preserved from it, a thin coat of Parker's Roman cement, much diluted with water; but he does not appear to have pursued this experiment, having transferred his right in the invention to other hands.

In addition to the seventeen patents which have been mentioned, he took out two or three others of less importance, at different times; besides a variety of contrivances, which he did not think it necessary to appropriate to himself by a legal privilege. Mr Nicholson has mentioned a double plunger for a forcing pump, as described to him by Mr Bramah (*Nich. Jour.* vol. vii. p. 50), which, in the form he has delineated, is certainly possessed of no particular advantage, producing only with a large ap-

paratus the effect of a much smaller. Mr Bramah had erected, in the latter years of his life, some large machines at the Thames bank for sawing stones and timber; he had begun to devise some improvements in bridges and in locks for canals; and he had at one time been actually employed in the execution of some water-works belonging to the department of the civil engineer, which he completed with ability and with success. His great and various exertions appear in some measure to have exhausted the strength of his constitution; and his last illness was immediately occasioned by a severe cold, taken in the prosecution of his experiments on the tearing up of trees, made in Holt Forest. He died in his sixty-sixth year, on the 9th of December 1814.

Mr Bramah was a sincere believer in the doctrines of the Christian religion; and, notwithstanding his diversified avocations, he left several manuscript essays on religious subjects. In his moral character he was cheerful, benevolent, and affectionate; in his habits he was neat and methodical; and he knew well how to temper liberality with economy. He often kept his workmen employed more for their sake than his own, when the stagnation of trade deprived him of the means of disposing of the products of their labour. It is surely on the characters of such individuals that the wealth and prosperity of the British empire most essentially depend; an inventive imagination controlled by a sound judgment, an incessant activity of mind and body, a head that can direct, and a heart that can feel, are the genuine sources of that practical superiority which is well known to distinguish the productions of our national industry. (*Life of Mr Bramah, by Dr Brown, in the New Monthly Magazine for April 1815.*)

(L. L.)

BRAMBANAN, a village of Java, nearly in the centre of the island, situated at the foot of a range of mountains on the north that run east and west to a great extent. It is noted for the remains of Hindu images, temples, and inscriptions, which are spread over an extent of ten miles. The most remarkable of those ruins are known under the name of the Thousand Temples, which constitute a square group of buildings, each side measuring 250 paces. One large temple stood in the centre of the square, which was surrounded at equal distances by three square rows of smaller ones, the rows being but a few feet distant from each other. At each of the four cardinal points, where there appear to have been gates, were two gigantic statues, each of them with a mace in its hand, and a snake twisted round its body. The inside walls of the large temple were adorned with figures of the conch shell, of water-vases, and of the sacred lotus, all denoting a Hindu origin. In these temples are figures, and other figures in relief are sculptured on the walls. They are all built of hewn granite, admirably cut and polished, and fitted into each other by means of a prominence in the upper stone, which fits into a groove on the upper surface of the stone underneath. Great skill is displayed in the architecture of the roof, which, like the rest of the building, is of hewn granite. The deepest mystery hangs over these ruins. They confirm the tradition, that at some former era a nation must have flourished in these islands, more advanced in the arts of civilization than the modern Javanese. But there is not the slightest evidence to show at what period those immense buildings were constructed. A Javanese manuscript asserts that it was in the Javanese year 1188, which corresponds to the year of the Christian era 1261.

BRAMBER, a small hamlet of twenty houses, in the rape of the same name in the county of Sussex, whence two members are returned to parliament. These burghage-houses belong to the Duke of Rutland and Lord Calthorpe, and of course confer on them the patronage.

Brambanan.

Bramhall
||
Brandenburg.

BRAMHALL, Dr JOHN, archbishop of Armagh, was born of an ancient family at Pontefract in Yorkshire about the year 1593. He was invited to Ireland by the lord deputy Wentforth, and soon afterwards obtained the archdeaconry of Meath, the best in that kingdom. In 1634 he was made bishop of Londonderry, a see which he improved very much; but the greatest service he rendered to the church of Ireland consisted in getting, with the deputy's assistance, several acts passed for abolishing fee-farms and recovering impropriations, by which, as well as by other means, he regained to the church in the space of four years L.30,000 or L.40,000 a year. In the convocation he prevailed upon the church of Ireland to unite in the same faith with the church of England, by adopting the thirty-nine articles of the latter; and would willingly have introduced the English canons, but could only prevail on their accepting such as were deemed proper. Articles of treason were exhibited against him in the Irish parliament; and at the treaty of Uxbridge in 1644, the English parliament made it a preliminary article, that Bishop Bramhall, with Archbishop Laud, and others, should be excepted from the general pardon. Upon this he went abroad; but, on the restoration, he was appointed archbishop of Armagh, primate and metropolitan of all Ireland, and was chosen speaker of the House of Lords. He died in 1663. He was the author of several works, which are collected in one volume folio.

BRAMPTON, a market-town of Eskdale Ward, in the county of Cumberland, 311 miles from London. It is an old town, of some note in former ages, and is still the head of the barony of Gillsland. It stands on the river Irthing, one mile from the Picts' wall. It has a large market on Tuesday, and a smaller one on Saturday, and several fairs to which the Scotch drovers repair with their cattle. The inhabitants amounted in 1801 to 1682, in 1811 to 2043, and in 1821 to 2448.

BRANAU, a small city in the Austrian province of Upper Ens, in the circle of Inviertel. It is situated on the banks of the Inn, and has manufactories of cloth and of paper. Long. 12. 52. 40. E. Lat. 48. 14. N.

BRANCHIDÆ, in *Grecian Antiquity*, priests of the temple of Apollo, at Didymus, in Ionia. They opened to Xerxes the temple of Apollo, and suffered him to carry away the riches; after which, thinking it unsafe to stay longer in Greece, they fled to Sogdiana, upon the frontiers of Persia, where they built a city called by their own name. But they did not escape the punishment of their crime; for on the conquest of Darius, Alexander the Great, informed of their treachery, put them all to the sword, and razed their city, thus summarily visiting the impiety of the fathers upon their posterity.

BRAND SUNDAY, *Dimanche des Brandons*, in French ecclesiastical writers, denotes the first Sunday in Lent, which is thus called on account of an ancient practice in the Lyonnais, where the peasants, in the night of this day, walked about their orchards, gardens, and other places, with torches lighted, or fire-brands in their hands; visiting every tree, addressing them one after another, and threatening that if they did not bear fruit well the ensuing season they should be cut down to the ground and burnt. This is evidently a relic of Paganism, and similar to what was practised by the ancient idolaters in the month of February, called *Februarius*, a *februando*.

BRANDENBURG, one of the larger provinces into which the kingdom of Prussia is divided, and the division from which that powerful monarchy originally sprung. It was at first denominated a marquisate; then the electoral dignity was added to the reigning family; and afterwards, by the acquisition of Prussia, Brandenburg became a portion of the kingdom so called. It is bounded on the

north by Mecklenburg, Pomerania, and West Prussia; on the east by Posen and Silesia; on the south by the kingdom of Saxony and the Saxon duchies; and on the west by Anhalt-Dessau, the province of Saxony, and Hanover. The extent is about 15,360 square miles, or near 10,000,000 English acres. It is divided into two circles, Potsdam and Frankfort, which are of nearly equal extent. The civil inhabitants, by the census of 1817, were 1,266,765; but, like those of all the other parts of Prussia, they have rapidly increased, and at the end of 1826 they were 1,479,482. The far greater part of the people are of the Lutheran church, but mixed with Catholics, Calvinists, and other sects, all of which are entitled to equal rights. The whole of the Catholics and smaller sects, including the Jews, do not exceed 30,000 persons. The entire province is nearly a sandy plain, but interspersed with a few fertile spots; and a considerable portion of it is covered with woods. It is generally well watered by streams, most of which empty themselves into the Elbe or the Oder. The chief agricultural product is rye, with some wheat, barley, oats, and buck-wheat. Fruit of all kinds is abundant, as well as culinary vegetables; and considerable quantities of hemp, flax, and hops are raised. The climate is cold and raw in winter, and excessively hot in summer. The manufactures are chiefly confined to Berlin and the other cities; but the rural inhabitants are employed in spinning or weaving, and produce much linen cloth.

BRANDENBURG, a city of Prussia, chief of the circle of the West Havell, in the province of its own name. It is an old place, on the banks of the Havell, by which it is divided into the new and the old town. It contains an ancient cathedral, six other churches, some charitable institutions, 1320 houses, and (in 1817) 12,004 inhabitants, occupied in making various goods of cotton, woollen, linen, and leather, and in breweries and distilleries. Long. 12. 8. 10. E. Lat. 54. 52. 45. N.

BRANDEUM, in ecclesiastical writers, a linen cloth or veil put over the tombs of the apostles Peter and Paul, and left there for some time, by which it is supposed to acquire a degree of sanctity, entitling it to be worshipped as a relic; and as such it was frequently sent by the pope as a present to some prince. In this sense Brandeum is the same with what was otherwise called *sanctuarium*, *sudarium*, *orarium*, and *velum*. The use of brandea was introduced as a means of diffusing and propagating the virtues and influences of relics, without moving, or in any way impairing, the substance of them; the translation of relics in early days being strictly forbidden.

BRANDING, on the face or hand, denotes a punishment inflicted by law for various offences, by burning with a hot iron, after the offender has been admitted to benefit of clergy.

BRANDON, a town in the hundred of Lachford, in the county of Suffolk, 78 miles from London, on the river Little Ouse, by which there is a communication with the sea at Lynn, and much corn is forwarded. The inhabitants amounted in 1801 to 1148, in 1811 to 1360, and in 1821 to 1770.

BRANDRITH denotes a trevet or other iron stand, whereon to set a vessel over the fire.

BRANDRITH, among builders, denotes a fence or rail about the mouth of a well.

BRANDT, GERARD, a learned divine of the reformed religion, was born at Amsterdam in 1626, and was successively minister in several places of the Netherlands. He wrote some works, particularly *A History of the Reformation of the Netherlands*, Amsterdam, 1671-74, in 2 vols. 4to; *The Life of Admiral Ruyter*; *An Account of the Trial of Barneveldt, Hoogerbeets, and Grotius*, in 1618,

Rotterdam 1619, 4to; and *Oratio Funeris Cornelii Hoofftii, Satrapæ Mudani*, Amsterdam, 1648; all, except the last, in the Flemish language. He died at Rotterdam in 1685.

BRANDY, a spirituous and inflammable liquor, extracted from wine and other liquors by distillation. The wine-brandy of France is esteemed the best in Europe. It is distilled wherever wine is made, and for this purpose pricked rather than good wine is employed. The chief brandies for foreign trade, and those accounted best, are the brandies of Bourdeaux, Rochelle, Cognac, Charenton, the Isle of Rhé, Orleans, the county of Blaisois, Poitou, Touraine, Anjou, Nantes, Burgundy, and Champagne.

BRANK, an instrument formerly used in some parts of Scotland, and in Staffordshire, for correcting scolding women. It was a sort of head-piece, which opened and inclosed the head of the shrew, while an iron, sharp as a chisel, entered the mouth, and subdued the unruly member within. Thus harnessed, the offender was led in triumph through the streets. Dr Plott, in his History of Staffordshire, has favoured the world with a minute description and figure of the instrument, which is there called a *scolding-bridle*; and he assures us that he looks upon it "as much to be preferred to the ducking-stool, which not only endangers the health of the party, but also gives the tongue liberty betwixt every dip; to neither of which (he adds) this is at all liable."

BRASIDA, an anniversary solemnity at Sparta, in memory of Brasidas, a Lacedemonian captain, famous for his achievements at Methone, Pylos, and Amphipolis. It was celebrated with sacrifices and games, in which none were permitted to attend but free-born Spartans. Whosoever neglected to be present at the solemnity was fined.

BRASIDAS, a celebrated general of the Lacedemonians about 424 years before the birth of Christ. He defeated the Athenians by land and sea, took many places, and rendered his native country formidable to all the neighbouring states. He repulsed the Athenians in their attempted surprise of Amphipolis, but died of the wounds he received in that battle. See *ATTICA*.

BRASS, in *Chemistry and Manufactures*, an alloy of copper and zinc. This name, however, has not been exclusively applied to the alloy of these metals; for the gun-metal, which has been also called brass, is an alloy of copper with tin. The same alloy, with more tin, is used in machinery, and is preferred to the alloy of copper and zinc, on account of its greater hardness.

It appears from the analysis of the brass of the ancients that it was an alloy of copper and tin. A small portion of tin gives to copper great hardness, and renders it capable of bearing much greater resistance. A larger portion of tin gives increased hardness, but is less fitted to bear a straining resistance, on account of its brittleness. Its elasticity is very great, which fits it for bells. In this state it is called bell-metal; and with a still greater proportion of tin it forms an alloy employed for the mirrors of reflecting telescopes. The alloy of copper with tin is easily distinguished from that with zinc, from the agreeable colour of the latter, which varies with the proportions of the metals. Pinchbeck has the least proportion of zinc. Common brass has more zinc, and the gold-coloured alloy called prince's metal contains a still greater proportion of zinc. An alloy of copper with a very large proportion of zinc is used for the common white metal buttons.

The various alloys of copper with tin and zinc forming the different kinds of brass, are to be considered as chemical compounds, and, of course, governed by the same laws of definite proportions which obtain in the more conspicuous compounds. On these principles, which cannot be doubted, we have an unerring rule for uniting these and

other metals in the best proportions, the weights of their atoms being previously known.

The weight of the atom of copper being 8, tin 7.35, and zinc 4, the following tables exhibit the proportions of the various alloys, expressed in atoms, and their proportions by weight, the third column pointing out the colour and character of the resulting compound. CZ and T are to represent the atoms of the metals respectively.

COMPOUNDS OF ZINC WITH COPPER.

Atoms.	Proportions by Weight.	Character and Colour of the Compounds.
C+Z	1 to 2	The best proportions for common brass.
C+2Z	1 to 1	The alloy called prince's metal, of a beautiful gold colour.
C+3Z	2 to 3	Of a paler yellow, very little malleable.
C+4Z	1 to 2	Still of a lighter colour, and not malleable.
C+5Z	2 to 5	Yellowish white, and brittle.
C+6Z	1 to 3	Very brittle, nearly white.
2C+Z	4 to 1	A very malleable brass used in watch-work.
3C+Z	6 to 1	An alloy much harder than copper, and inclining to its colour.

COMPOUNDS OF TIN WITH COPPER.

Atoms.	Proportions by Weight.	Character and Colour of the Compounds.
T+C	11 to 12	A very brittle and rather white alloy.
2T+C	11 to 6	Still more brittle and more white.
3T+C	11 to 4	Very white, used for speculums.
4T+C	11 to 3	Coarse-grained, and too brittle for any purpose.
T+2C	11 to 24	A yellowish alloy, very hard and sonorous.
T+3C	11 to 36	Bell metal.
T+4C	11 to 48	A very hard alloy, used for some culinary vessels.
T+5C	11 to 60	Softer, but not malleable.
T+6C	11 to 72	Still increases in softness, and of a yellower colour.
T+7C	11 to 84	Used for some purposes in machinery.
T+8C	11 to 96	An alloy used for cannon.
T+9C	11 to 108	More common for cannon and machinery, and used for bronze statues.

Hitherto the proportions of these alloys have depended upon the practice of workmen, guided by numerous trials; but what confirms the law of definite proportions, is the necessity of adhering to fixed proportions, ascertained by trial. By attending to the proportions pointed out in the above tables, the most striking and proper compounds will be produced, without the trouble of trying. Any intermediate proportions will, doubtless, be marked by defective colour, irregular crystallization, or imperfect malleability.

Although the most direct way of forming these different kinds of brass is by immediately combining the metals together, one of them, which is most properly called brass, was manufactured long before zinc, one of its component parts, was known in its metallic form. The ore of the

Brass.

latter metal was cemented with sheets of copper, charcoal being present; and the zinc was united with the copper, without becoming visible in a distinct form. The same method is still practised for making brass.

Brass making.

The materials used in making brass are copper in small round masses, produced by passing the melted metal through an appropriate vessel into water, in which state it is called shot copper; and calamine, an ore of zinc. This latter substance is a carbonate of zinc, often containing some oxide of iron, which gives it a reddish appearance. As it is chiefly found in combination with lead, the lumps frequently contain more or less gallena, which requires to be separated by the same means as those employed for purifying lead ore. The calamine is first reduced to powder, and the lead is then separated by washing. When the calamine is separated, reduced to powder, and sifted, it is heated upon the hearth of a reverberatory furnace. This expels the volatile matter, which is principally water and carbonic acid. What remains is principally oxide of zinc, abounding with some earthy matter, and probably much carbonic acid, which is not all expelled by the heat. The calamine thus prepared, charcoal powder, and copper, are the materials to be operated upon. The proportions in which they are mixed together are equal weights of copper and prepared calamine, and $\frac{1}{10}$ th their weight of powdered charcoal.

This mixture, intimately blended, is compressed into a crucible of the form of fig. 3, Plate CXXVII. One of these crucibles holds about 100 lbs. of brass when the process is finished; but as this consists of the pure copper and zinc, the pot, when charged, will contain of copper 66·3 lbs., of calamine 63 lbs., and of charcoal powder 13 lbs. When the crucible is filled, the contents should be covered with a mixture of clay sand and horse-dung, in order to defend the metals and charcoal from the action of the air. When this covering is strictly attended to, less charcoal powder may be employed, and a larger dose of the other ingredients may be put in its place; but it is generally the most defective part of the process.

Fig. 1, Plate CXXVII., is a plan of the furnace. The part AB is taken at the level EF, showing the opening into the furnace on the ground floor at *a* and *b*; while *c* and *d* are horizontal flues leading to the chimney *f*, which may be cut off from the same by the dampers seen in the dark part of the flue. CD, in the same figure, is a plan on the level GH, where the pots rest upon the cast-iron plate on the bottom *x*, *y*.

Fig. 2 is an elevation and section of the same furnace. AB shows a front view of the pyramidal chimney, and the archway opening into it. CD is a section of the same, through the middle of the fire-place II. R, P, Q, is a vaulted passage going across the building, and open at both ends for the admission of air, which passes through the openings in the arch, into the fires. The bottom of the furnace is not a common grate, but a thick plate of cast-metal, perforated with holes for the air to pass through; one hole being between each pot, as they are seen arranged in fig. 1, at I, I, and also in the section at *x*, *y*. When the pots are put upon the plate, the fire is not placed immediately upon them, as it would not only injure them, but displace the covering. To prevent this, the pots are first covered by some dried heath or common brambles, which defend them for a time, when the fuel is thrown in. By the time the brambles are consumed the coal will have coked upon the pots, and thus act as a defence for the rest of the process. The fire is kept up from twelve to twenty hours at the Cheudle brass-works in Staffordshire, from which these drawings were taken. They cast twice in the twenty-four hours.

After the refuse is skimmed off, the melted brass is

cast into ingots if sold for melting over again, and into plates if intended to be rolled into sheets or made into wire. The plates are cast between large blocks of Cornwall stone. The lower stone is fixed, and the face made even and smooth, by filling up the recesses of the rough stone with fine sand. The upper stone is similarly prepared, and is suspended over the fixed one. The height and breadth of the place to receive the metal is limited by iron bars laid on the lower stone. The upper stone is then let down upon the bars. The lower stone is a little longer than the upper one, and projects to the front. Being a little higher in that part, it forms a lip or mouth-piece for receiving the metal. The flat sides of the cast plate are therefore bounded by the surface of the stones, and the edges of these by the bars above mentioned. The ingot moulds are recesses in blocks of cast-iron, open on one side.

The most certain and correct method of forming brass and the other compounds expressed in the table above given, is by immediately uniting the metals in given weights. It should, however, be observed, that it will be found difficult to introduce zinc into melted copper. The best way of uniting it with copper, in the first instance, is to introduce the copper in thin slips into the melted zinc, till the alloy requires a considerable heat to fuse it, and then to unite this alloy with the melted copper.

Corinthian Brass, famous in antiquity, is a mixture of gold, silver, and copper. Lucius Mummius having sacked and burnt the city of Corinth, 146 years before Christ, it is said this metal was formed from the immense quantities of gold, silver, and copper, with which that city abounded, having been melted and run together by the violence of the conflagration.

BRASS, in the glass trade. Thrice calcined brass is a preparation employed by glassmen to give many very beautiful colours to their work. The manner of preparing it is this: Having placed thin plates of brass on tiles on the leet of the furnace, near the occhis, let it stand to be calcined there for four days, and it will become a black powder sticking together in lumps. Pulverize this, sift it fine, and recalcine it during four or five days more; at the end of which time it will not stick together, but remain a loose powder of a russet colour. This is to be calcined a third time in the same manner; but great care must be taken in the third calcination that it be neither overdone nor underdone. The way to be certain when it is right, is, to try it several times in glass while melting. If it causes the glass, when well purified, to swell, boil, and rise, it is properly calcined; if not, it requires longer time. This, according to the different proportions in which it is used, produces a sea-green, an emerald-green, or a turquoise colour.

Brass, by long calcination alone, and without any mixture, affords a fine blue or green colour for glass; but there is a method of calcining it also with powdered brimstone, so as to make it afford a red, a yellow, or a chalcidony colour, according to the quantity and other variations in the using of it. This method of calcination is the following: Cut thin plates of brass into small pieces with shears, and lay them *stratum super stratum*, with alternate beds of powdered sulphur, in a crucible; calcine this for twenty-four hours in a strong fire, then powder and sift the whole, and finally expose the powder upon tiles for twelve days to a reverberating furnace, at the end of which time powder it fine and keep it for use. The glass-makers have also a method of procuring a red powder from brass by a more simple calcination, which serves for many colours. The method of preparing it is this: They put small and thin plates of brass into the arches of the glass furnaces, and leave them there till they are sufficiently calcined,

which the heat in that place, not being sufficient to melt them, does in great perfection. The calcined matter, powdered, is of a dusky red, and requires no further preparation.

BRASS-COLOUR, one prepared by the braziers and colourmen to imitate brass. There are two sorts of it, the red brass or bronze, and the yellow or gilt brass. The latter is made only of copper-filings, the smallest and brightest that can be found; with the former it is usual to mix some red ochre, finely pulverized; and both are used with varnish. In order to make a fine brass that will not take any rust or verdigris, it must be dried with a chafing-dish of coals as soon as it is applied. The finest brass-colour is made of powdered brass imported from Germany, diluted into a varnish, which is prepared and used after the following manner: The varnish is composed of one pound four ounces of spirits of wine, two ounces of gum-lac, and two ounces of sandarac; these two last drugs being pulverized separately, and afterwards put to dissolve in spirit of wine, and care being taken to fill the bottle but half full. The varnish being made, mix a quantity of it with the pulverized brass, and apply it with a small brush to that which it is intended to brass over. But too much must not be mixed at once, because the varnish being very apt to dry, it would not be possible to employ it all soon enough. It is therefore better to make the mixture at several times. In this manner are brased over figures of plaster, which look almost as well as if they were of cast brass.

BRASS LEAF is made of copper, beaten into very thin plates, and afterwards rendered yellow. The German artists, particularly those of Nuremberg and Augsburg, are said to possess the best method of giving to these thin plates of copper a fine yellow colour like gold, by simply exposing them to the fumes of zinc, without any real mixture of it with the metal. These plates are cut into little pieces, and then beaten out fine like leaves of gold; after which they are put into books of coarse paper and sold at a low price for the vulgar kinds of gilding. The parings or shreds of these very thin yellow leaves, being well ground on a marble plate, are reduced to a powder similar to gold, which serves to cover, by means of gum-water or some other glutinous fluid, the surface of various mouldings or pieces of curious workmanship, giving them the appearance of real bronze, and even of fine gold, at a very trifling expense, because the gold colour of this metallic powder may be easily raised and improved by stirring it in a wide earthen basin over a slow fire.

BRASSICA CABBAGE. See **HORTICULTURE**.

BRASSICAVIT, or **BRACHICAVIT**, in the manège, means a horse whose fore legs are naturally bent archwise, and who is so called by way of distinction from an arched horse, whose legs are bowed by hard labour.

BRAULS, Indian cloths with blue and white stripes. They are otherwise called *turbans*, because they serve to cover those ornaments of the head, particularly on the coast of Africa.

BRAUNFELS, a town in the Prussian province of Coblenz, in the circle of Wetzlar-Braunfels. It belongs to the duke of that name, formerly a prince, but now mediatised. The castle, on the top of a sugar-loaf hill overlooking the city, is one of the most picturesque objects in Germany. The foot is washed by the Iserbach, and the town is on the side of the hill, so that every part of it is commanded by the castle or ducal residence. It contains about 1500 inhabitants.

BRAUNSBURG, a circle in the Prussian government of Königsberg and province of East Prussia. It extends over 392 square miles, and contains three cities and seventeen parishes, with 30,863 inhabitants. Though very woody,

it produces much good corn and flax. The city, whose name it bears, stands near the Frische Haff, which communicates with the Baltic Sea at Pillau. It contains four Catholic churches and one Lutheran, with 645 houses and 6194 inhabitants. Long. 9. 44. 35. E. Lat. 54. 19. 25. N.

BRAURONIA, in *Grecian Antiquity*, a festival in honour of Diana, surnamed *Brauronia*, from its having been observed at Brauron, an Athenian borough. This festival was celebrated once in five years, under the management of ten men, called in Greek *ἱερονόμοι*. The victim offered in sacrifice was a goat, and it was customary for certain men to sing portions of Homer's Iliad. The most remarkable persons at this solemnity were young virgins, habited in yellow gowns, and consecrated to Diana. It was unlawful for any of them to be above ten or under five years of age.

BRAWN, the flesh of a boar soused or pickled. For this end the boar should be old, because the older he is the more horny will the brawn be. The method of preparing brawn is as follows: The boar being killed, it is the flitches only, without the legs, that are made brawn; the bones of these are to be taken out, and the flesh sprinkled with salt and laid in a tray, that the blood may drain off; then it is to be salted a little, and rolled up as hard as possible. The length of the collar of brawn should be as much as one side of the boar will bear, so that when rolled up it may be nine or ten inches in diameter. The collar being thus rolled up, it is to be boiled in a copper or large kettle till it become so tender that a straw may be run through it, and then set by till it is thoroughly cold, and put into a pickle prepared in the following manner: For every gallon of water add a handful or two of salt and as much wheat-bran; boil them together, then drain the bran clear off from the liquor, and when it is quite cold put the brawn into it.

BRAY, SIR REGINALD, an architect and politician, was the second son of Sir Richard Bray, one of the privy council to King Henry VI. Sir Reginald was instrumental in the advancement of King Henry VII. to the throne of England, and was greatly in favour with that prince, who bestowed honours and wealth upon him. His skill in architecture appears from Henry VII.'s chapel at Westminster, and the chapel of St George at Windsor; he had a principal concern and direction in building the former, and in finishing and bringing to perfection the latter, to which he was also a liberal benefactor. He died in 1501, and was interred in the above chapel, probably under the stone where Dr Waterland lies; for, on opening the vault to admit the body of that gentleman, who died in 1740, a leaden coffin of ancient form was found, which, by other appearances, was judged to be that of Sir Reginald, and was, by order of the dean, immediately arched over.

BRAY, *Dr Thomas*, a learned and pious divine, was born at Marton, in Shropshire, in the year 1656, and educated at Oxford. He was at length presented to the vicarage of Over-Whitacre, in Warwickshire; and in 1690 he obtained the rectory of Sheldon, where he composed his Catechetical Lectures. These procured him such reputation, that Dr Compton, bishop of London, pitched upon him as a proper person to model the infant church of Maryland, and establish it upon a solid foundation; and for that purpose he was invested with the office of commissary. He now engaged in several important undertakings. He caused sums to be raised for purchasing small libraries for the use of the poor ministers in the several parts of our plantations; and the better to promote this design, he published two books. One of these is entitled *Bibliotheca Parochialis*, or a scheme of such theological and other heads as seem requisite to be perused or

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occasionally consulted by the clergy, together with a catalogue of books which may be profitably read on each of those points; the other, *Apostolical Charity*, its nature and excellency considered. He endeavoured to get a fund established for the propagation of the gospel, especially among the uncultivated Indians; and by his means a patent was obtained for erecting the corporation called The Society for the Propagation of the Gospel. By his industry he also procured relief for prisoners, and formed the plan of the society for the reformation of manners, charity schools, and other like purposes. He wrote *Martyrology*, or *Papal Usurpation*, in one volume, folio; *Directorium Missionarium*; and other works. Dr Bray died in 1730, aged seventy-three.

BRAY, a small sea-port town of Ireland, in the county of Wicklow, and province of Leinster, situated on the south side of the river Bray. It is ten miles distant from Dublin.

BRAZEN SEA, in *Jewish Antiquity*, one of the sacred utensils in the temple of Solomon. It was cast in the

plain of Jordan, and removed from thence into the inner court of the temple, where it was placed upon twelve oxen, three of which looked towards each quarter of the world. It was ten cubits from the one brim to the other, five cubits in height, and thirty cubits in circumference, and contained three thousand baths. The brim of it was perfectly round, and so it continued in the two upper cubits; but below the brim, in the three lower cubits, it was square. It was a hand-breadth in thickness, and the brim was wrought like the brim of a cup, with flowers of lilies. About the body of this huge vessel were two borders of engravings, representing the heads of oxen in demi-relief, and out of these some suppose the water to have issued. This brazen or molten sea was designed for the priests to wash themselves in before they performed the service of the temple. Water was supplied through a pipe out of the well Etam.

BRAZIER, an artificer who makes and deals in all kinds of brass ware.

B R A Z I L.

IN presenting an account of this extensive and important country, we shall, *first*, give a brief historical sketch of the progressive discovery of its coasts and interior, of its gradual settlement, and of the auspices under which its social institutions have developed themselves; *secondly*, a condensed view of its physical geography, meteorology, and natural products; and, *thirdly*, a similar view of its inhabitants, their form of government, moral and intellectual culture, and agricultural, manufacturing, and commercial industry.

History.

I. *History*.—Brazil was discovered in 1499, by Vincent Yañez Pinçon, a companion of Columbus. He descried the land near Cape St Augustine, and sailed along the coast as far as the river Amazons, whence he proceeded to the mouth of the Orinoco. He made no settlement, but took possession of the country in the name of the Spanish government, and carried home, as specimens of its natural productions, some drugs, gems, and Brazil wood. Next year the Portuguese commander, Pedro Alvarez Cabral, appointed by his monarch to follow the course of Vasco de Gama in the east, was driven, by adverse winds, so far from his track, that he reached the Brazilian coast, and anchored in Porto Seguro (lat. 16° S.) on Good Friday. On Easter-day an altar was erected, mass celebrated in presence of the natives, the country declared an apanage of Portugal, and a stone cross erected in commemoration of the event. Cabral dispatched a small vessel to Lisbon, to announce his discovery, and, without forming any settlement, proceeded to India.

On the arrival of the news in Portugal, Emanuel invited Amerigo Vespucci to enter his service, and dispatched him with three vessels to explore the country. This navigator's first voyage was unsuccessful; but in a second he discovered a safe port, the site of which is not accurately known, to which he gave the name of All-Saints. He remained there five months, and maintained a friendly intercourse with the natives. Some of the party travelled forty leagues into the interior. Vespucci erected a small fort, and leaving twelve men, with guns and provisions, to garrison it, embarked for Portugal; having loaded his two ships with Brazil wood, monkeys, and parrots.

The poor and barbarous tribes of Brazil, and their country, the mineral riches of which were not immediately discovered, offered but few attractions to a government into the coffers of which the wealth of India and Africa was flowing. Vespucci's settlement was neglected. For nearly

thirty years the kings of Portugal paid no further attention to their newly-acquired territory, than what consisted in combating the attempts of the Spaniards to occupy it, and dispersing the private adventurers from France, who sought its shores for the purposes of commerce. The colonization of Brazil was prosecuted, however, by subjects of the Portuguese monarchy, who traded thither chiefly for Brazil wood. It was convenient for these traders to have agents living among the natives; and adventurers were found who were willing to take up their abode with them. The government also sought to make criminals of some use to the state, by placing them in a situation where they could do little harm to society, and might help to uphold the dominion of their nation. The utter want of any legal check upon these earliest European settlers, combined with the ferocious characters of many of them, and the hardening influence of their feuds with the native cannibals, were anything but favourable to the morals of the infant empire.

The first attempt on the part of a Portuguese monarch to introduce an organized government into his dominions, was made by Joam III. He adopted a plan which had been found to succeed well in Madeira and the Azores; dividing the country into hereditary captaincies, and granting them to such persons as were willing to undertake their settlement, with unlimited powers of jurisdiction, both civil and criminal. Each captaincy extended along fifty leagues of coast. The boundaries towards the interior were undefined.

The first settlement made under this new system was that of S. Vincente. Martim Affonso de Sousa, having obtained a grant, fitted out a considerable armament, and proceeded to explore the country in person. He began to survey the coast about Rio Janeiro, to which he gave that name because he discovered it on the first of January 1531. He proceeded south as far as La Plata, naming the places he surveyed on the way from the days on which the respective discoveries were made. He fixed upon an island, in latitude 24½° south, called by the natives Guaibe, for his settlement. The Goagnazes, or prevailing tribe of Indians in that neighbourhood, as soon as they discovered the intentions of the new comers to fix themselves permanently there, collected for the purpose of expelling them. Fortunately, however, a shipwrecked Portuguese, who had lived many years under the protection of the principal chief, was successful in concluding a

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treaty of perpetual alliance between his countrymen and the natives. The good understanding thus happily established was long preserved. Finding the spot chosen for the new town inconvenient, the colonists removed to the adjoining island of S. Vincente, from which the captaincy derived its name. An unsuccessful expedition was made into the interior in search of mines. Nevertheless the colony prospered. Cattle and the sugar-cane were at an early period introduced from Madeira, and here the other captaincies supplied themselves with both. The founder of the colony was soon removed from the active superintendence of its progress, by being appointed governor-general of India; but on his return to Portugal he watched over its welfare, sending out supplies and settlers, and leaving it at his death in a flourishing condition to his son.

Pero Lopes de Sousa received the grant of a captaincy, and set sail from Portugal at the same time as his brother, the founder of S. Vincente. He chose to have his fifty leagues in two allotments. That to which he gave the name of S. Amaro adjoined S. Vincente, the two towns being only three leagues asunder. The other division lay much nearer to the line between Paraíba and Pernambuco. He experienced considerable difficulty in founding this second colony, from the strenuous opposition of a neighbouring tribe, the Petiguares; but at length he succeeded in clearing his lands of them; and not long afterwards he perished by shipwreck. The extreme proximity of his first settlement at S. Amaro to his brother's at S. Vincente was at first advantageous to both; but the former coming after his death into the hands of strangers, their interfering and contested boundaries gave rise to much trouble and litigation.

Rio Janeiro was not settled till a later period; and for a considerable time the nearest captaincy to S. Amaro, sailing along the coast northwards, was that of Espírito Santo. It was founded by Vasco Fernandes Coutinho, who having acquired a large fortune in India, sunk it in this scheme of colonization. He carried with him no less than sixty fidalgos. They named their town by anticipation, Our Lady of the Victors; but it cost them some hard fighting with the Goagnazes to justify the title. Having defeated these savages, the colonists carried on the building with spirit, planted canes, and established four sugar-works; and Coutinho seeing every thing prosperous, returned to Lisbon to enlist more colonists, and to make preparations for an expedition into the interior in search of mines.

Pedro de Campo Tourinho, a nobleman and excellent navigator, received a grant of the adjoining captaincy of Porto Seguro. This, it will be remembered, is the spot where Cabral first took possession of Brazil. Tourinho and his associates fortified themselves on the place where the capital of the presidency still stands. The Tupinoquins at first offered some opposition; but having made peace, they observed it faithfully, notwithstanding that the oppression of the Portuguese obliged them to forsake the country. In this guilt Tourinho is not implicated. That he had influence enough with the natives to induce many of them to collect and settle in villages, is a proof that he dealt justly by them. Sugar-works were established, and considerable quantities of the produce exported to the mother-country. It was found impossible, by reason of an endemic disorder, to rear kine in the province; but horses, asses, and goats, succeeded.

Jonge de Figueiredo, *Escrivam da Fazenda*, was the first donatory of the captaincy of the isles. His office preventing him from taking possession in person, he deputed the task to Francisco Romeiro, a Castilian. The Tupinoquins, the most tractable of the Brazilian tribes, made peace with the settlers, and the colony was founded

without a struggle. The son of the original proprietor sold the captaincy to Lucas Geraldês, who expended considerable wealth in improving it; and, in a short time, eight or nine sugar-works were established.

The coast from the Rio Francisco to the bay of Bahia was granted to Francisco Pereira Coutinho; and the bay itself, with all its creeks, was afterwards added to the grant. When Coutinho formed his establishment, where Villa Velha now stands, he found a noble Portuguese living in the neighbourhood, who, having been shipwrecked, had, by means of his fire-arms, raised himself to the rank of chief among the natives. He was surrounded by a patriarchal establishment of wives and children; and to him most of the distinguished families of Bahia still trace their lineage. The regard entertained by the natives for Caramuru (so he was called by them) induced them to extend a hospitable welcome to his countrymen; and for a time every thing went on well. Coutinho had, however, learned in India to be an oppressor, and the Tupinambas were the fiercest and most powerful of the native tribes. The Portuguese were obliged to abandon their settlement; but several of them returned at a later period, along with Caramuru, and thus a European community was established in the district.

A factory had, some time before the period at which these captaincies were established, been planted at Pernambuco. A ship from Marseilles took it, and left seventy men in it as a garrison; but being captured on her return, and carried into Lisbon, immediate measures were taken for re-occupying the place. The captaincy of Pernambuco was granted to Don Duarte Coelho Pereira as the reward of his services in India. It extended along the coast from the Rio St Francisco, northward to the Rio de Juraza. Duarte sailed with his wife and children, and many of his kinsmen, to take possession of his new colony, and landed in the port of Pernambuco. To the town which was there founded he gave the name of Olinda. The Cabetes, who possessed the soil, were fierce and pertinacious; and, assisted by the French, who traded to that coast, Coelho had to gain by inches what was granted him by leagues. The Portuguese managed, however, to beat off their enemies; and, having entered into an alliance with the Tobayanes, followed up their success. After this triumph the colony continued, with the exception of a brief interval, to enjoy peace, and to prosper during the life of its founder.

Attempts were made about this time to establish two other captaincies, but without success. Pedro de Goes obtained a grant of the territory between the captaincies of S. Vincente and Espírito Santo; but his means were too feeble to enable him to make head against the aborigines, and the colony was broken up after a painful struggle of seven years. Joam de Barros, the historian, obtained the captaincy of Maranhão. For the sake of increasing his capital, he divided his grant with Fernan Alvares de Andrada and Aires da Cunha. They projected a scheme of conquest and colonization upon a large scale. Nine hundred men, of whom one hundred and thirteen were horsemen, embarked in ten ships under the command of Aires da Cunha. But the vessels were wrecked upon some shoals about one hundred leagues to the south of Maranhão; and the few survivors, after suffering immense hardships, escaped to the nearest settlements, and the undertaking was abandoned.

By these adventurers, the whole line of Brazilian coast, from the mouth of La Plata to the mouth of the Amazons, had become studded at intervals with Portuguese settlements, in all of which law and justice were administered, however inadequately. Sufficient capital was in consequence attracted, between the year 1531, in which De

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Sousa founded the first captaincy, and the year 1548, to these colonies, to render them an object of importance to the mother country. Their organization, however, both in regard to their means of defence against external aggression and internal violence, was extremely defective. Portugal was distant, and the inhabited portions of each captaincy were too far asunder to be able to afford reciprocal assistance. They were surrounded by, and intermingled with, large tribes of savages. Behind them the Spaniards, who had an establishment at Assumption, had penetrated almost to the sources of the waters of Paraguay, and had succeeded in establishing a communication with Peru. Orellana, on the other hand, setting out from Peru, had crossed the mountains and sailed down the Amazons. Nor had the French abandoned their hopes of effecting an establishment on the coast. But the internal mismanagement of the Portuguese settlements was even worse than the inadequacy of their defensive force. The governor of every captaincy exercised uncontrolled authority; the property, honour, and lives of the colonists, were at the mercy of these feudal chieftains; and the people groaned under their oppression. If Portugal wished to preserve and profit by her colonies, it was evident that measures must be taken to ameliorate their institutions.

The obvious remedy for these evils was to concentrate the executive power, to render the petty chiefs amenable to one tribunal, and to confide the management of the defensive force to one hand. In order to this the powers of the several captains were revoked, whilst their property in their grants was reserved to them. A governor-general was appointed, with full powers, civil and criminal. The judicial and financial functions in each province were vested in the *Ouvidor*, whose authority in the college of finance was second only to that of the governor. In levying the dues of the crown, he was assisted by the *Juiz de Fora*. Every colonist was enrolled either in the *Milicias* or *Ordenanzas*. The former were obliged to serve beyond the boundaries of the province, the latter only at home. The *Milicias* were commanded by *Coroneis*, the *Ordenanzas* by *Capitães Mores*. Both were immediately under the governor. The chief cities received municipal constitutions; as in Portugal. Thome de Sousa was the first person nominated to the important post of governor-general. He was instructed to build a strong city in Bahia, and to establish there the seat of his government. In pursuance of his commission, he arrived at Bahia in April 1549, with a fleet of six vessels, on board of which were three hundred and twenty persons in the king's pay, four hundred convicts, and as many free colonists as swelled the number of adventurers to one thousand. Care had been taken for the spiritual wants of the provinces, by associating six Jesuits to the expedition.

Old Caramuru, who still survived, rendered the governor essential service, by gaining for his countrymen the good will of the natives. The new city was established where Bahia still stands. Within four months one hundred houses were built, and surrounded by a mud wall. Sugar plantations were laid out in the vicinity. During the four years of Sousa's government, there were sent out at different times supplies of all kinds; female orphans of noble families, who were given in marriage to the officers, and portioned from the royal estates; and orphan boys to be educated by the Jesuits. The capital rose rapidly in importance, and the captaincies learned to regard it as a common head and centre of wealth. The governor visited them, inspected their fortifications, and regulated the administration of justice. Meanwhile the Jesuits undertook the moral and religious culture of the natives, and of the scarcely less savage colonists. Strong opposition was at first experienced from the gross ignorance of the

Indians, and the depravity of the Portuguese, fostered by the licentious encouragement of some abandoned priests who had found their way to Brazil. Over these persons the Jesuits had no authority; and it was not until the arrival of the first bishop of Brazil in 1552 that any thing like an efficient check was imposed upon them. Next year Sousa was succeeded by Duarte da Costa, who brought with him a reinforcement of Jesuits, at the head of whom was Luis de Gran, appointed, with Nobrega the chief of the first mission, joint provincial of Brazil.

Nobrega's first act was one which has exercised the most beneficial influence over the social system of Brazil, namely, the establishment of a college on the then unreclaimed plains of Piratininga. The spot selected by him for the site of this establishment is on the ridge of the Serra do Mar, ten leagues from the sea, and thirteen from S. Vincente. It was named S. Paulo, and has been at once the source whence knowledge and civilization have been diffused through Brazil, and the nucleus of a colony of its manliest and hardiest citizens, which has sent out successive swarms of hardy adventurers to people the interior. The mode of education pursued by the Jesuits at S. Paulo was the same as that observed in all their other missions. Their good intentions were in part frustrated by the opposition of Duarte the governor; and it was not until 1558, when Mem de Sa was sent out to supersede him, that their enlightened projects were allowed free scope. This great man, comprehending better than his predecessor the system of these missionaries, went hand in hand with the ecclesiastics, during the whole of his government.

It has been observed above that Rio Janeiro was not colonized at the time when the rest of the coast was portioned out into captaincies. It was first occupied by French settlers. Nicholas Durand de Villegagnon, a bold and skilful seaman, having visited Brazil, saw at once the advantages which might accrue to his country from a settlement there. In order to secure the interest of Coligny, he gave out that his projected colony was intended to serve as a place of refuge for the persecuted Huguenots. Under the patronage of that admiral, he arrived at Rio Janeiro in 1558, with a train of numerous and respectable colonists. As soon, however, as he thought his power secure, he threw off the mask, and began to harass and oppress the Huguenots by every means he could devise. Many of them were forced by his tyranny to return to France; and ten thousand Protestants, ready to embark for the new colony, were deterred by their representations. Villegagnon, finding his force much diminished in consequence of his treachery, sailed for France in quest of recruits; and during his absence the Portuguese governor, by order of his court, attacked and dispersed the settlement. For some years the French kept up a kind of bush warfare; but in 1567 the Portuguese succeeded in establishing a settlement at Rio.

Mem de Sa continued to hold the reins of government in Brazil upon terms of the best understanding with the clergy, and to the great advantage of the colonies, for fourteen years. On the expiration of his power, which was nearly contemporary with that of his life, an attempt was made to divide Brazil into two governments; but, this having failed, the territory was re-united in 1578, the year in which Diego Laureço da Viega was appointed governor. At this time the colonies, although not yet independent of supplies from the mother country, were in a flourishing condition; but the usurpation of the crown of Portugal by Philip II. changed the aspect of affairs. Brazil, believed to be inferior to the Spanish possessions in mines, was considered of importance merely as an outpost to prevent the intrusion of foreign nations. It was consequently abandoned to comparative neglect for the period intervening

History. between 1578 and 1640, during which it continued an ap-panage of Spain. The population increased; and domestic enterprise and foreign invasion called forth the energies of the people; but, as far as the legislature was concerned, nothing was done.

No sooner had Brazil passed under the Spanish crown, than English adventurers directed their hostile enterprises against its shores. In 1586 Witherington plundered Bahia; in 1591 Cavendish burned S. Vincente; in 1595 Lancaster took Olinda. These exploits were the transient operations of freebooters. In 1612 the French attempted to found a permanent colony in the island of Marajó, where they succeeded in maintaining themselves till 1618. This attempt led to the erection of Maranhão and Para into a separate *Estado*. But it was on the part of the Dutch that the most skilful and pertinacious efforts were made for securing a footing in Brazil; and they alone of all the rivals of the Portuguese have left traces of their presence in the national spirit and institutions of Brazil.

The very imperfect constitution of the United Provinces was the cause why many of the executive functions were delegated to companies of mercantile adventurers. Among the offices properly appertaining to the government, the maintenance and defence of the Spice Islands had been intrusted to the East India Company. The success of that body suggested the establishment of a West India Company. Its charter secured to it a monopoly of the trade to America and the opposite coast of Africa, between the tropic of Cancer and the Cape of Good Hope. The company was taken bound to render an account of its proceedings every sixth year.

This body dispatched, in 1624, a fleet against Bahia. The town yielded almost without a struggle. The Dutch governor fortified his new acquisition; and his proclamation offering toleration and protection to all, collected around him a multitude of Indians, Negroes, and Jews. The fleet soon after sailed; a squadron being detached against Angola, with the intention of taking possession of that colony, in order to secure a supply of slaves. The Portuguese, in the meanwhile, who had fled at first in the hope of eluding what they conceived to be merely an incursion of pirates, began to collect for the purpose of expelling the permanent intruders; and the weakening of the Dutch force by the departure of the fleet inspired them with fresh courage. The descendants of Caramuru formed a link between the aborigines and the Portuguese which existed in no other part of Brazil. The consequence was, the hearty co-operation of all the natives against the invaders. The Dutch were obliged to capitulate in May 1625. The honours bestowed upon the Indian chiefs for their assistance in this war broke down in a great measure the barrier between the two tribes; and there is at this day a greater admixture of their blood among the better classes in Bahia than is to be found elsewhere in Brazil.

For some years the Dutch confined themselves to depredations upon the marine of Spain and Portugal. In 1630 they attempted again to effect a settlement; and Olinda yielded after a feeble resistance. They were unable, however, to extend their power beyond the limits of the town, until the arrival of Count Maurice of Nassau in 1630. His first step was to introduce a regular government among his countrymen; his second, to send to the African coast one of his officers, who took possession of a Portuguese settlement, and thus secured a supply of slaves. Nassau suffered repulses in several of his expeditions, and particularly in that which he undertook against Bahia. Nevertheless, in the course of four years, the limited period of his government, he succeeded in confirming the Dutch supremacy along the coast of Brazil,

History. from the mouth of the S. Francisco to Maranhão. He expended the revenues of the country, the booty obtained from the Portuguese, and a great part of his private fortune, in fortifying the mouths of rivers, building bridges to facilitate mercantile intercourse, and beautifying and repairing towns. He strictly observed the Dutch policy of tolerating all religions. He promoted the amalgamation of the different races, and sought to conciliate the Portuguese by the confidence he reposed in them. His object was to found a great empire; but this was a project at variance with the wishes of his employers,—an association of merchants, who were dissatisfied because the wealth which they expected to see flowing into their coffers was expended in promoting the permanent interests of a distant country. Count Maurice was recalled in 1644. His successors possessed neither his political nor military talents, and had to contend with more energetic enemies.

In 1640, the revolution which placed the house of Braganza on the throne of Portugal restored Brazil to masters more inclined to promote its interests, and assert its possession, than the Spaniards. It was indeed high time that some exertion should be made. The northern provinces had fallen into the power of Holland; the southern, peopled in a great measure by the hardy descendants of the successive colonists, who had issued on all sides from the central establishment of S. Paulo, had learned, from their habits of unaided and successful enterprise, to court independence. Adventurers had penetrated into those central mountains where the diamond is found. They had ascended the waters of the Paraguay to their sources. They had extended their limits southwards till they reached the Spanish settlements on La Plata. They had reduced to slavery numerous tribes of the natives. They were rich in cattle, and had commenced the discovery of the mines. While yet nominally subject to the crown of Spain, they had not scrupled on more than one occasion to wage war on their own account against the settlements of that country. When, therefore, the inhabitants of S. Paulo saw themselves about to be transferred, as a dependency of Portugal, from one master to another, they conceived the idea of erecting their country into an independent state. But their attempt was frustrated by Amador Bueno de Ribiero, the person they had selected for their king. When the people shouted "Long live King Amador," he cried out "Long live Joam IV.," and took refuge in a convent. The multitude, left without a leader, acquiesced, and this important province was secured to the house of Braganza.

Rio and Santos, although both evinced a desire of independence, followed the example of the Paulistas. Bahia, as capital of the Brazilian states, felt that its ascendancy depended upon the union with Portugal. The government, thus left in quiet possession of the rest of Brazil, had time to concentrate its attention upon the Dutch conquests. The crown of Portugal was, however, much too weak to adopt energetic measures. The tyranny of the successors of Nassau, by alienating the minds of the Portuguese and natives, drove them to revolt, before any steps were taken in the mother country for the re-conquest of its colonies. Joam Ferdinand Vieyra, a native of Madeira, organized the insurrection which broke out in 1645. This insurrection gave birth to one of those wars in which a whole nation, destitute of pecuniary resources, military organization, and skilful leaders, is opposed to a handful of soldiers advantageously posted and well officered. But brute force is unable to contend with scientific valour, whilst the want of numbers prevents the intruders from reaching the enemy they always repulse. The struggle degenerates into unceasing skirmishes and massacres, conducting to no result. Vieyra, who had the sense to see this, repaired to the court of Portugal, and discovering the weakness and poverty of the ex-

History. ecutive, suggested the establishment of a company similar to that which in Holland had proved so successful. His plan, notwithstanding the opposition of the priests, was approved of, and in 1649 the Brazil Company of Portugal sent out its first fleet. The additional impetus communicated by this new engine to the exertions of the Portuguese colonists and their Indian allies, turned the scale against the Dutch; and, after a most sanguinary war, Vieyra was enabled in 1654 to present the keys of Olinda to the royal commander, and to restore to his monarch the undivided empire of Brazil.

From the date of the expulsion of the Dutch down to that of the flight of the house of Braganza from French oppression, Brazil suffered comparatively little from domestic broils or foreign invasion. The approach of foreign traders was prohibited, while the tenths and regalities reserved by the crown drained the country of a great proportion of its wealth. The authority of the governors was despotic in its abuse, but limited in its corrective power; the administration of justice was slovenly in the extreme; the pay of all functionaries, civil, ecclesiastic, and military, was so parsimonious as to render peculation inevitable; and yet, in spite of all these disadvantages, the wealth and happiness of the people continued silently and steadily to increase. The reason was, that they were left in a great measure to themselves, and had an ample field within their own land for the exertion of their industry.

We have already adverted to the important part which the inhabitants of the captaincy of S. Paulo have played in the history of Brazil. The establishment of the Jesuit college had attracted to its neighbourhood a number of settlers from S. Vincente. The Indians of the district were of mild dispositions, and frequent intermarriages took place between them and the Europeans. A race of men sprung from this mixture, native to the soil, hardy and enterprising, wearing but lightly the bonds which attached them to the mother country. The first object of inquiry with the colonists was, whether the land of which they had taken possession were rich in metals. Gold was found, but not in sufficient quantities to reward the labour bestowed in search of it. The Portuguese next devoted their energies to excursions against the more remote Indian tribes, with a view to obtaining slaves. Traces of gold having been observed in the mountain ranges north of S. Paulo, successive bands of adventurers attempted to penetrate the wilderness. The spirit of enterprise was thus nourished and confirmed. From the year 1629 the Paulistas repeatedly attacked the settlements of the Jesuits in Paraguay, although both provinces were nominally subject to the crown of Spain, and carried away numbers of the natives into captivity. Other bands penetrated into Minas, and, still farther northward and westward, into Goyaz and Cujaba, in search of gold.

At first the gold-searchers, like the slave-hunters, undertook temporary expeditions, with the view, doubtless, of returning laden with booty, and settling in their native homes. By degrees, however, as the distance of the newly-discovered mines increased, and establishments for working them became necessary, new colonies were founded. Different associations of adventurers penetrated, in the years 1693, 1694, and 1695, into the district of Minas Geraes, which had been explored by the Paulistas at least twenty years before. In the beginning of the eighteenth century five of its principal settlements were elevated by royal charter to the privileges of *Villas*. In 1720 the district was separated from S. Paulo, of which it had previously been esteemed a dependency, and placed under the control of a governor-general. In 1670 the gold-searchers penetrated into Goyaz; but it was not till the commencement of the next century that, encouraged by the dis-

covery of the mines of Cujaba, in the province of Matto Grosso, a permanent colony was settled there.

The first attempt to regulate by legislative enactments the industry of the miners of Brazil was made as early as 1618 by Philip III. According to his code of regulations, the privileges of the discoverer were that he should have one mine of eighty Portuguese *varas* by forty, and a second allotment of sixty by thirty upon the same vein. A hundred and twenty *varas* were to intervene between the portions. Any adventurer might claim a mine, but he could only have one of the same extent as the discoverer's first portion. No one except the discoverer might have more than one original grant within the distance of a league and a half; but the purchase of another person's allotment within that distance was allowed. Mines might be sought for and worked upon private property because they belonged to the king, but the owner of the land had a right to indemnification. Mining adventurers were entitled to turn their cattle into the lands of the *consello*, and even into private property, without the owner's permission, upon paying the value of the pasturage. No man engaged in mining could be arrested for debt, or have a distress levied upon such capital as he had employed in the work. Mines might only be granted to such persons as possessed the means of peopling and working them. A grant was forfeited if not taken possession of within sixty days. The executive and judicial functions within the mining districts were vested in a provedor and his secretary, those of the fiscal in a treasurer. None of these officials could hold a share in a mine, or trade in its produce, under penalty of loss of office and confiscation of property. The provedor or his secretary measured out the allotments; received and inspected the samples of metal from new mines; registered the grants, with the holder's oath to pay his fifths regularly and faithfully; and decided finally in all disputes to the amount of fifty milrees, with the reservation only of the right of appeal to the *Provedor Mór da Real Fazenda* to any amount. The treasurer received the royal fifths, and superintended the weighing, registering, refining, and stamping of all the gold. The king's share was deposited in a chest under three locks, the keys of which were kept by the provedor, secretary, and treasurer. A yearly account was returned of all the discoveries and produce.

For many years these laws were little more than a dead letter. The Paulistas were wholly engrossed with their expeditions in quest of slaves; the government and the colonists of the other captaincies, with the Dutch and other wars. Some few gipsy-like establishments were scattered thinly throughout the gold country. By degrees the desire of gain induced the more powerful and wealthy colonists to solicit large grants. No attention was paid to the restriction of the number that might be conferred on each individual; and the consequence was, that men of influence monopolized the mines, and were obliged either to sublet them to those they had forestalled, or to leave them unopened. It was found necessary in 1702 to alter the existing laws.

The whole ordinary civil and military authority was vested in the superintendent (*Guarda Mór*). The appointment of the treasurer belonged to this officer. Both were allowed a limited number of deputies. At first the salaries of all these officers were levied upon the miners, but subsequently the privilege of mining was conceded to them in lieu of a salary. No second grant was made to any person until he had worked the first. The allotments were regulated by the number of slaves which the miner employed. Besides its fifths, the crown reserved an allotment, selected after the adventurer had taken his first grant and before he had chosen his second. If an ad-

venturer did not begin to work his ground within forty days, a third part of it, upon information of the lapse, was assigned to the informer, and the other two thirds reverted to the crown. Cattle were allowed to be imported into the mining districts from Bahia, but no persons were allowed to enter except the drovers. They were required to notify their arrival, the number of their cattle, and the prices they obtained. Any person might carry gold-dust from the mines to Bahia to purchase cattle, but not till he had paid his fifths and provided himself with a certificate. These regulations were enforced by strong penalties, in order to prevent frauds upon the revenue. Slaves, and all other goods except cattle, were only allowed to be introduced from Rio, and that either by the way of S. Paulo or Taboate. No idle persons were allowed to remain about the mines; no goldsmith was tolerated there, nor any settler possessed of a slave capable of exercising this craft.

The same infatuated passion for mining speculations which had characterized the Spanish settlers in South America, now began to actuate the Portuguese. Adventurers crowded to the scene of action from all the captaincies; not mere "landless resolute" alone, but men of substance also. Labourers and capital were drained off to the mining districts. The *Engenhos* were either abandoned or left half-cultivated, from the inability of the proprietors to offer for slaves the ruinous prices paid by the adventurers of the mines. Brazil, which had hitherto in a great measure supplied Europe with sugar, sank before the competition of the French and English, who had no mines to distract their attention. Commerce of every kind declined along with this staple commodity. The court endeavoured for a time to counteract this course of enterprise, but in vain.

A new source of wealth for Brazil, had it been properly managed, but, as matters have turned out, merely a new source of injudicious restriction, was now about to be opened up. Some adventurers who had prosecuted the business of gold-washing northwards from Villa de Principe in the captaincy of Minas, made a discovery of diamonds about the year 1710. The value of these minerals was not known till several years after, when an *Ouvridor* of the *Comarca* of Serro Frio, in which they were found, who had seen unpolished diamonds at Goa, ascertained what they were. In 1730 the discovery was announced for the first time to that government, which immediately declared the diamonds regalia. A further search showed that the district was equally rich in other gems. In 1741 its limits were described with greater precision, and the liberty to collect diamonds farmed upon a lease of four years to two influential inhabitants, at the rate of 230,000 rees for every negro, with permission to employ six hundred. At every renewal of the lease a high rent was exacted, and the tenants indemnified themselves by conducting their operations in the most wasteful manner.

While the population of Brazil, and the cultivation of its natural products, continued thus to increase, the moral and intellectual culture of its inhabitants was left in a great measure to chance. There was a hierarchical establishment, but one altogether inadequate to the extent of the territory. There were schools, but "few and far between." The colonists, thinly spread over what appeared an illimitable region, were most of them alike beyond the reach of instruction and of the arm of the law. The restrictions upon the free exercise of industry, introduced with a view to benefit the royal treasury, were little calculated to reconcile men to legal restraints which they scarcely knew in any other form. They grew up, therefore, with those robust and healthy sentiments engendered by the absence of false teachers; but at the same time they became ha-

bituated to a repugnance to legal ordinances, accustomed to give full scope to all their passions, and encouraged by their sense of ascendancy over the Indians to habits of violence and oppression.

From the first moment of their landing in Brazil, the Jesuits had constituted themselves the protectors of the oppressed natives. But they were strenuously opposed by the interested colonists, and by hedge priests, who lent their countenance to the infamous traffic in human beings, as they would have pandered to any other vice, in order to retain their ascendancy over the minds of the settlers. The Jesuits were not however easily dismayed, and, by dint of the most persevering exertions, they at last elicited from government an explicit confirmation of the freedom of the natives. The next step of these venerable fathers was to collect their red children, as in all their other missions, into *aldeas*, over which officials of their order exercised both spiritual and temporal authority. Their intentions were pious and noble, but their plan was erroneous. They attempted to teach the most recondite dogmas of the Christian faith, before either the hearts or heads of their pupils were sufficiently awakened to comprehend them. They taught observance to the rules of external decorum, without inculcating those more essential principles which are independent of all form. By depriving the Indians of the power of managing their own affairs, they effectually stifled within them the germs of human thought and action. It is only by free action, right or wrong, and the consciousness of its consequences, that man can be awakened into intellectual life. The Indian of the *aldeas* was little better than a puppet, and, when separated from his tutors, he soon sunk back into hopeless and irreclaimable barbarism.

The persecution of the Indians was yet more efficaciously put a stop to by the sacrifice of an equally innocent and yet more injured race. The Portuguese establishments on the coast of Africa have ever been more extensive, and their slave dealings better organized, than those of any other nation. By this means an immense number of negroes were annually imported into Brazil, and being found more active and servicable as labourers than the native tribes, the latter were in a great measure left to enjoy their savage independence. The Jesuits, like Las Casas, professed a limited philanthropy, and, satisfied with securing their own clients, winked at the oppression of the blacks.

The Portuguese government, under the administration of Carvalho afterwards Marquis of Pombal, attempted to extend to Brazil the effects of that bold spirit of innovation which directed all his actions. The motives which instigate man's conduct are of such a mingled nature, and so inextricably intertwined, that the question in how far this minister was actuated in his first step by regard to the public good, and how far by private pique, is of no easy solution. Luckily, it is of little importance, in a sketch of a nation's history, where individuals tell merely as counters.

Carvalho had experienced great resistance to his plans of reform at home from the Jesuits; and his brother, when appointed governor of Maranhão, experienced a resistance no less strenuous on their part to some measures of his government. This was enough to determine the proud minister to lessen the power of the order. With his sanction, the Jesuits and other regulars were deprived of all temporal authority over their *aldeas* in the state of Maranhão and Para. These, being twenty-eight in number, were converted by the edict of the governor into nine townlets, eighteen towns, and one city. The towns were to be governed by *juizes ordinarios*, to fill which offices a preference was given to Indians. The *aldeas* independent of towns were to be governed by their respective chiefs.

History. The lands adjacent to the towns and hamlets were divided among the Indians, and declared heritable property.

To these regulations of his brother, the minister super-added some enactments intended to supply the loss of the Jesuits as teachers. The task of religious instruction was delegated to the bishop. Till such time as the Indians should be sufficiently advanced in civilization to manage their own affairs, a director was appointed to reside in each settlement; a man of integrity and zeal, and conversant with the native tongues. He possessed no coercive jurisdiction, but, when he observed remissness on the part of the native authorities in the administration of the laws, might complain to the governor. He was expected to explain to the Indians the advantages of industry and sobriety, to instruct them in the simpler arts and manufactures, and to recommend the adoption of the amenities of civilized life. Above all, these functionaries were directed to combat the prejudice, that there existed a natural inferiority in the Indian character, and to promote, as far as in them lay, intermarriages between the white and red races. As a reward for the directors, they were to have a sixth part of all that the Indians reared, excepting what was specially appropriated for their own consumption.

These ordinances, originally promulgated for Maranhão and Para, were ratified in Lisbon, and extended to the whole of Brazil. But the good which they might have done was neutralized in a great measure by some compulsory services still left binding upon the Indians, and by listlessness on the part of the white inhabitants in carrying them into effect. No good understanding could subsist between an ambitious order and the minister who had so openly braved them. Carvalho felt his new arrangements insecure as long as a Jesuit remained in Brazil. First of all, he sought to render the order suspected of being accessory to some partial revolts among the Indian troops on the Rio Negro. But it was the confession of one of the leaders of the conspiracy against the life of the king of Portugal, when put to the torture, that some Jesuits were implicated in the undertaking, that finally delivered them into his hands. In 1760 they were expelled from Brazil, under circumstances of the most unmitigated cruelty.

Pombal's next measure attracted more attention than his plans for the improvement of the Indians. The Brazilian Company, founded by Vieira, which so materially contributed to preserve its South American possessions to Portugal, had been abolished, in 1721, by Joam V. Such instruments, however, were calculated to win the confidence of a bold spirit like that of Pombal. In 1755 he established a chartered company, with a capital of 1,200,000 crusados, in 1200 shares, to trade exclusively with Maranhão and Para. In 1759 a similar company was chartered for Paraíba and Pernambuco. Remonstrances were made on the part of the Board of Public Good, and the British factory at Lisbon; but the members of the former body were punished, and those of the latter were disregarded. Encouraged by success, the minister established an exclusive company for the whale fishery, and bestowed upon it the monopoly of furnishing Brazil with salt. This company had its head-quarters in the island of S. Catthaina. Some time after these arrangements, an extension of the facility of intercourse was granted, and Portuguese subjects, instead of being restricted to the annual fleets, were allowed to trade in single ships to Bahia and the Rio.

The arrangements of Pombal extended also to the interior of the country. The claims of the original donatories in the respective captaincies were indefinite and oppressive in the highest degree. Other ministers had from time to time bought up some of these rights; Carvalho extinguished them at once, indemnifying the holders. With all his power, however, he durst not interfere in be-

half of such new Christians (converted Jews) as were accused of adhering in private to their ancestral faith; but he prohibited, under strict penalties, light and malicious denunciations. He strengthened and enforced the regulations in the mining districts. Observing the profuse mode in which the treasures of the diamond district were lavished, he moved the king to take the management of it into his own hands. In 1772 an ordinance was issued, in which Pombal, as prime minister, reserved to himself the management of this district. The details of business were discharged by three directors in Lisbon, and three administrators in Brazil. At the head of the latter was placed an intendant-general, who, as the representative of majesty, exercised an unlimited power within his jurisdiction. He controlled the working of the diamond mines; he stood at the head of the judicial and police establishments; and he was authorized to punish every inhabitant convicted of having jewels in his possession with banishment and confiscation of goods, and even upon mere suspicion to order any individual to quit the district.

The policy of many of Pombal's measures is more than questionable. His encouragement of monopolies, and his preference of the interests of the crown to those of the state, as evinced in the regulations of the mining and diamond districts, do not admit of defence. But the extirpation of the Jesuits, and the admission of all races to equal rights in the eye of the law—the abolition of feudal privileges, and of certain restrictions upon commerce, with the livelier spirit which he knew how to infuse even into his monopolies—powerfully co-operated towards the development of the capabilities of Brazil. The spirit of improvement must have been already awake in the bosoms of the people, otherwise even his legislative energies must have been expended in vain. Still the merit abides with him of having firmly organized the powers of the land, and marshalled their way. And yet when, upon the death of his king and patron in 1777, court intrigue forced him from his high station, his successor was lauded to the skies for concluding a treaty of limits, in which Pombal's chivalrous bravery had rendered Spain glad to acquiesce, whilst he who had done so much for his country's institutions was reviled on all hands. The first epoch of Brazilian constitutional history is the struggle of the isolated captaincies to establish themselves on the coast. The second is their union under one common head, and under established laws, by the appointment of a governor-general. The third is the amended organization of the extensive empire by Pombal. The fourth, to which we are now about to turn, has just been accomplished, leaving Brazil to start free and energetic on a new and untried career.

The thirty years which succeed Pombal's retirement from active life present scarcely any marked feature for the historian to depict. The mining districts continued to be enlarged, especially in the direction of Matto Grosso. The companies of Maranhão and Pernambuco were abolished, but the impulse which they had given to national industry remained. Cotton, the growth of which they had promoted at Maranhão, was introduced into Pernambuco, and cultivated so successfully as to become in a short time the main article of export. Roads were opened throughout the country, to facilitate internal intercourse. Removed from all communication with the rest of the world, except through the mother country, Brazil remained unaffected by the first thirteen years of the great revolutionary war, except in as far as regard some slight disputes respecting the limits of French and Portuguese Guiana. Indirectly, however, even this isolated country had participated in the impulsion which had passed, like electricity along the links of a chain, from nation to nation.

With time and industry came wealth; with wealth came the feeling of importance, followed by an investigating spirit; and then succeeded, under every disadvantage, bold inquiry and assertion of rights. Latterly too the exclusion of foreigners had not been so strictly enforced. The ports of Brazil were still closed against foreign traders; but the entrance of men of war, and such merchant ships as could find no other harbours to refit in, gradually introduced a tolerated freedom of intercourse.

The prince regent of Portugal, afterwards Joam VI., driven from the mother country by the invasion of the French, landed at Bahia on the 21st of January 1808. The royal family was received with enthusiasm; but it was at that time in search of a secure asylum from a power which the monarchs of the continent of Europe began to believe reached everywhere; and Bahia, easily assailed from the sea, might at any time, by a very small land force, be cut off from all supplies by land. The harbour of Rio, on the other hand, is easily defended, and has at all times an easy communication with the interior. Towards Rio, therefore, the royal fugitives shaped their way, and arrived there on the 7th of March.

The first care of the regent was to introduce into Brazil the same state arrangements which had existed in Portugal. In the course of the year 1808 he organized the *dezembargo do paço* (council of state), *conselho da justiça* (ministerial council of justice), *conselho da fazenda* (ministerial council of justice), *meza da consciência* (consistorial tribunal). The *relação* (court of appeal) of Rio Janeiro was erected into a *supplicação* (supreme court of appeal) for the whole country; a royal treasury, mint, and register were erected; a supreme board of police for the whole of Brazil was instituted; the boundaries of the captaincies were ascertained with greater precision; the powers of the provincial governors, and the jurisdiction of the provincial courts, were defined with greater strictness; and the collection of the royal tenths was subjected to a revised system.

This increased energy and precision of the organization of the executive would of itself have conferred an inestimable benefit upon the country; but the arrival of the royal family brought yet more important advantages in its train. On the 18th of February 1808 a *carta regia* threw open to foreigners a free commercial intercourse with all the harbours of Brazil. On the 12th of October the same year the regent sanctioned the statutes of a bank which had, some years before, been established at Rio, and conferred upon it, with extensive privileges, the title of *Banca do Brasil*. This institution, in addition to its private mercantile functions, discharged those of farming many of the regalia. It was also in the practice of advancing large sums to the state, sometimes in consideration of valuable deposits, sometimes upon the assignment of taxes not yet due. Foreign merchants caused more than one run to be made upon the bank, with a view to try its stability; but its connection with the mint enabling it to meet every emergency, it maintained a high degree of credit, at least with the subjects of the state of Brazil. The increased activity which a multitude of new customers, and an increased circulating medium, imparted to the trade of Rio, added a new stimulus to the industry of the whole nation. In a short time the government was enabled to reduce many of its impositions one half. Immense numbers of English artisans and ship-builders, Swedish iron-founders, German engineers, and French artists and manufacturers, sought fortunes in the new land of promise, and diffused, both by example and precept, industry and ingenuity throughout the kingdom.

In the beginning of 1809 French Guiana was taken possession of by the Brazilian troops, and the territories of

the state thus extended on the north to the limits they still maintain.

Towards the end of the year 1811 a royal decree assigned 120,000 crusadoes per annum, to be taken from the customs of Bahia, Pernambuco, and Maranhão, for forty years, to the Portuguese who had suffered during the French war. This most unjust appropriation of the state revenue naturally excited discontent in these powerful provinces. It happened also that the salaries of many officers, both civil and military, remained at this time unpaid; a circumstance which had been made in more than one district a pretext for exactions. Some disputes had taken place between the Brazilians and English respecting the slave-trade; and the former, already disposed to suspect their own government, viewed with a jealous eye the British establishment at Rio. In order to avert or allay the gathering storm, an edict was issued on the 16th of December 1815, raising Brazil to the dignity of an independent kingdom, and placing it on an equal footing with Portugal and the Algarves. The national pride was flattered, and for some time nothing else was heard of but addresses of thanks and congratulations, with feasts and rejoicing in every district.

In 1817 the discontents of the northern provinces, which had for a while been hushed, broke out into open insurrection in Pernambuco. The people of Recife entertained some democratical notions, which might, perhaps, by a curious observer, be traced to the period of the Dutch government. They remembered, with no small degree of pride, that it was mainly their own endeavours that had driven out these foreigners; they were jealous of Rio's monopoly of the advantages of a royal residence; but, above all, they were averse to the payment of taxes for the support of a luxurious court. A regular plan of insurrection was formed; troops were raised and disciplined; and fortifications were begun in one or two places. By the loyalty of the neighbouring provinces, and the promptitude of the royal troops, this premature revolt was easily suppressed; but the cruel punishments of the leaders served to diffuse the spirit of disaffection more widely throughout the north. The war in which Brazil had been involved towards the frontiers of Buenos Ayres, by obliging the government to call out the *milicias* of S. Paulo, had, by involving these hardy countrymen in a quarrel respecting the merits of which they knew little and cared less, excited among them no small degree of discontent.

In November 1820 the news of the revolution in Portugal reached Brazil. A kindred spirit spread at once throughout all the provinces. Para took the lead. On the first day of the year 1821, the infantry declared for the constitution; the cavalry and artillery joined them; a provisional government was appointed; and all this was done in the name of the king, and without bloodshed. On the 10th of February the troops rose in Bahia. A few lives were lost; but ultimately, both troops and people, in the presence of the governor, solemnly declared their adherence to the constitution which should be formed by the Cortes. A governing junta was appointed, which speedily received addresses of adhesion from all the towns and villages in the neighbourhood. The ferment was perhaps greater in Rio than anywhere else, from the more determined opposition offered to all constitutional projects by the king and the court party. On the 18th of February, however, a conviction of the folly of resistance induced the king to recognise a junta of his Brazilian subjects, appointed to take into consideration such parts of the constitution as might be applicable to Brazil. A mutual distrust continued to exist, which might have led to the most fatal consequences but for the promptitude of the prince Dom Pedro. In the morning of the 26th, every thing threatened immediate bloodshed, when he presented him-

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History. self to the citizens with a list of a new ministry, and voluntarily took the oath to the new constitution. His conduct on this occasion afterwards received the express sanction of the king, who resolved, however, to return to Lisbon; a resolution which he carried into effect by sailing on the 24th of March ensuing.

Before going on board, he appointed Dom Pedro regent in his absence. He addressed the troops, recommending to them fidelity to the crown and the constitution, and promising an increase of pay to all. This was a cruel mockery of the regent; for he had left nothing in the treasury wherewith that prince could fulfil the promise. Nor was this the full extent of the evil. Immense sums were carried out of the country by the Portuguese who followed the king to Lisbon. The well-grounded belief that the coffers of the bank had been emptied by the king, gave a shock to its credit which it has not yet recovered. A large amount of specie had been taken up for government bills, on the treasures of Pernambuco, Bahia, and Maranhão, which had disclaimed the superiority of the government at Rio. The prince was thus left, with an empty treasury, to rule over a people which felt itself beggared by the dishonesty of government, at a moment when, even without this conviction, sufficient seeds of civil commotion were everywhere scattered abroad.

Dom Pedro acted in this trying emergency, in conjunction with the junta of Rio, like a man of sense and spirit. He remitted some of the most oppressive imposts upon the trade of the interior, particularly the duties on salt. Something was done towards improving the condition of the schools, hospitals, and barracks. Books were allowed to be imported duty free. The junta published an exhortation to tranquillity, obedience, and a patient waiting till the result of the deliberations of the Cortes, now joined by their own deputies, should be known. At the same time they invited all persons to send in statistical notices and plans for improvements.

The circumstance, however, which contributed perhaps more than any other to strengthen Dom Pedro's hands, and uphold his power, was one which wore at first a threatening aspect. At S. Paulo, the regiment of caçadores, discontented at not receiving the promised augmentation of pay, took up arms in a tumultuous manner on the 3d of June, and threatened not to lay them down again until they received it. They were with difficulty restrained from proceeding to extremities, owing to the presence of mind exhibited by their captain. A strong excitement, however, continued to agitate, not only the troops, but the people. The magistrates and principal inhabitants took advantage of the occasion furnished by the assembly of the militia, on account of a festival on the 21st. They were kept together, and assembled in the great square before the town-house. The great bell of the Camara was tolled, and when the people had assembled, the cry was raised of "Viva el Re, Viva el Constituição, Viva o Principe Regente," and a provisional junta demanded. This request was re-echoed by the crowd, and complied with by the magistrates. From that moment all remained quiet in the city, and the most important province of Brazil declared for the prince.

The remainder of the year was spent in organising provisional juntas in the different capitals. On the 19th of September an edict was addressed to all these bodies, enjoining them to communicate directly with the Cortes at Lisbon. It was fondly hoped that the Cortes would admit Brazil to all the privileges of an integral part of the nation, with independent courts, civil and criminal. The Cortes were, however, too much afraid of losing a rich colonial dependency, to entertain such a thought. They passed decrees for the election of separate governments

History. in every province of the Brazils; and for the appointment of a military commander in each, who should be independent of the provincial government, and accountable only to the Cortes for his conduct. The prince was ordered to return to Lisbon as soon as these governments were established. These decrees reached Rio Janeiro before the end of December 1821, and excited universal indignation.

The junta of S. Paulo were the first to move. On the 24th of December they applied to the regent, requesting him to remain among them. The prince answered that he had transmitted their address to the king. On the 7th of January 1822, the Camara of Rio and the wealthiest inhabitants addressed his royal highness on the danger to be apprehended in the event of his obeying the Cortes. With apparent hesitation he promised to delay his departure till the ultimatum of the Cortes should arrive. A movement was threatened on the part of the Portuguese troops in Rio; but prompt measures being taken with them, they were obliged to embark for Europe. Not long after, the junta and inhabitants of Pernambuco obliged the Portuguese troops stationed in that city to embark for Lisbon. Madeira de Mello continued to hold Bahia with 1500 European troops and some militia for Portugal; and Monte Video was kept possession of in the king's name by General Lecor. All the rest of Brazil was in the hands of the independents. Thus circumstanced, Dom Pedro accepted the title of prince regent and perpetual defender of the Brazils, and convoked a general assembly of the states, consisting of one hundred deputies, nominated by parochial electors chosen by the people. The avowed purpose of collecting such a body was, that it might deliberate in public session upon the precise terms on which Brazil was to remain united to Portugal, examine whether the constitution of Lisbon were adapted to Brazil, and suggest necessary emendations. It was also provided, that as soon as the constitution should be agreed on, the council of representatives should assume legislative functions, determine the seat of Brazilian sovereignty, and communicate the resolutions of Brazil to the Cortes of Portugal. On the meeting of the council, the prince informed them of the anxiety manifested in all quarters for the convocation of a general constitutional legislative assembly; and when they declared their acquiescence, a decree was issued to that effect. The independence of Brazil was proclaimed on the 1st of August; and on the 12th of October, his birth-day, Dom Pedro was installed constitutional emperor and perpetual defender of Brazil.

The Cortes having intimated sufficiently their resolution to retain Brazil, two decrees were issued by the emperor on the 11th of December; the first laying an embargo on all vessels bound to the Portuguese territories in Europe; the other sequestering all goods belonging to Portuguese subjects, with one or two trifling exceptions. On the 11th of January 1823, another decree was issued, encouraging Brazilian subjects to take out letters of marque against Portugal. Meanwhile Madeira, who had been reinforced from Portugal, began to infest the neighbourhood of Bahia with hostile attacks. But on the 21st of March, Lord Cochrane hoisted his flag on board the Pedro Primeiro. On the 2d of July, Bahia surrendered, and the Portuguese fleet put to sea, but was followed and destroyed by the Brazilian admiral. In the course of the year Monte Video surrendered, and the independence of Brazil was established, although not recognized by the mother country till near the close of 1825.

The interior of the new empire was far from presenting an equally satisfactory picture. The proclamation of the emperor had been received with hearty good will by all, as the readiest step to independence. With regard, how-

ever, to the organization of the state, there prevailed a marked difference of opinion. The republican party was very strong, particularly in the northern and central provinces. There was a yet more numerous body which ardently desired a constitutional monarchy. But there were also a few, formidable chiefly as including among their number some of the most practised intriguers of the court, and several military leaders, whose views favoured a despotic government. A false step on the part of the ministers, who were firm constitutionalists, at the first opening of congress, and the inopportune illness of the emperor, threw such a power into the hands of the democratic party, that a new ministry was chosen. The assembly next proceeded to discuss the propriety of conceding to the emperor an absolute veto. It was resolved by a considerable majority that such a veto was inexpedient. The emperor, however, declared his resolution not to acquiesce in this determination. The assembly prepared some obnoxious decrees in order to put his resolution to the test, and he began to caress the military. The strong language of the journals on the one hand, and the violent proceedings of some European officers on the other, brought the matter to a speedy termination. On the 12th of November, while the assembly was sitting, news arrived that two columns of military were approaching the city; and immediately afterwards a military officer brought an imperial rescript dissolving the congress. This body quietly dissolved, but several of the leading members of the constitutional and republican parties were immediately arrested.

Dom Pedro found himself in an awkward predicament. The annual revenue only covered two thirds of the expenditure. The local revenues of all the different provinces were likewise inadequate to cover the local expenditure. Attempts had been made to supply the deficiencies by forced loans and donations, and even by sequestrations; means which are soon exhausted, and always create hostility. Several of the ministers resigned in disgust at the emperor's proceedings. It was with difficulty that others were found to supply their places, and even they soon followed the example of their predecessors. Disturbances broke out in several of the provinces, and were suppressed with the greatest difficulty. Pedro soon gave way to the storm, and promulgated on the 11th of December the project of a constitution, which for a time pacified the country.

The history of Brazil from this period down to the moment of Dom Pedro's abdication is only interesting as displaying the growing intelligence and business talents of her statesmen, and the incapacity of her emperor. He plunged into wars without forethought, and retreated from them without having attained his object. He took no one decided step towards arranging the finances or consolidating the institutions of the country. Without comprehending or respecting the rights of his subjects, he aimed at being popular; destitute of military talents, he coveted military glory; no politician, he aspired to despotic power. His conduct was vacillating, his actions were inconsequential and ineffective. The safety of the empire demanded his removal on the ground of incompetence. What may be the future fate of Brazil it is impossible to predict with certainty. The predilections of a strong party in favour of republican institutions, an infant prince, and the absence of a privileged aristocracy, are strong indications.

II. *Physical Geography, &c.*—Brazil extends, in its greatest length, from the sources of the Rio Branco, near the fifth degree of north latitude, to the sources of the Ybicui, near the thirty-first degree of south latitude. In its utmost breadth it extends from Cape St Augustine, in the thirty-fifth degree of west longitude, computing from

Greenwich, to the river Javary, about the seventy-third. From the embouchure of the Rio Grande in the south, to that of the Wiapoc, between the fourth and fifth degrees of north latitude, the Atlantic Ocean forms the eastern boundary of Brazil. This portion of its outline is of an irregular crescent form, extending in a curved line from the fifty-third degree of west longitude, at the thirty-third degree of south latitude, to the thirty-fifth, betwixt the ninth and tenth; and then retrograding more abruptly to the fifty-second degree of west longitude, between the fourth and fifth degrees of north latitude. The inland frontier of Brazil may be thus traced:—First, turning to the north, we start from that point in the Javary which crosses obliquely the seventy-third degree of west longitude; we descend the stream to its junction with the Amazons; follow the downward course of that river to the point where it receives the waters of the Yupura; ascend the latter till we reach the degree of longitude in which the Javary and Amazons mingle their waters; from that point cross the country to the Fall of Corocobi on the Rio Negro; and thence pursue the line of the summits of the Cordillera, dividing the waters of the Essequibo from the tributaries of the Amazons, till we arrive at the sources of the Wiapoc, which we descend till we reach the ocean. Returning to our starting place, we follow a line extending due east from the Javary to a point exactly mid-way between the spot at which the conjoined waters of the Guapore and Mamore receive the name of Madeira, and that stream's confluence with the Amazons; ascend the Madeira and Guapore to its source; cross the mountains by a line running north and south; strike the waters of the Paraguay at the mouth of the Juaru; and descend to the station of Nova Coimbra. From this point the boundary line pursues a zig-zag course, determined by the currents of a number of minor streams, which it alternately ascends and descends, keeping in the main the direction of south-south-east until it reach the ocean at the neutral ground of Minio Merin.

The territory comprised within these boundaries may be roughly estimated at little less than two millions of square miles. A considerable portion has never yet been explored; and respecting the whole our information is often vague and unsatisfactory. Even the line of coast has not been laid down with any degree of certainty; and the Portuguese maps are in this respect utterly unworthy of attention. They have been republished for centuries without revision or amendment; and we have no information respecting the observations and calculations upon which they were based. The English charts are better, being the accumulated experience of practical seamen, who had a deep stake in rendering them as accurate as possible. In general, however, they are anonymous; and the well-known difficulty of determining the latitude and longitude by observations made on board of ship alone still more diminishes our confidence in them. Some French charts lately published, bearing to be the results of a special exploratory expedition, have only tended to increase our uncertainty, by their wide deviation from all former authorities. When we turn to the interior of the land, matters are still worse. Distances and localities are in general assumed upon the authority of the conjectures of travellers provided with no more accurate instrument than a compass, or of the rude estimates of the inhabitants of European or Indian descent; and there are numerous districts regarding which we are entirely destitute of even these meagre and inaccurate sources of information.

The natural conformation points out two great divisions Surface of the territory of Brazil; the valley of the Amazons to the north, and the hill country to the south. The physical structure of each of these districts is necessarily depen-

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dent upon the other, and their respective characters can only be properly comprehended by mutual reference. It will better enable us, however, to comprehend both, if we at first view them apart: and in attempting a sketch of each, we shall commence with that of which less is yet known than of the other, but which is in all probability doomed one day to make a prominent figure in history; we mean the valley of the Amazons.

The immense course of the river Amazons, from Tabatinga, where it enters the confines of Brazil, to the ocean, deducting its windings, extends, when we pursue the course of the main channel, to $401\frac{1}{2}$ leagues, of twenty to a degree, or, when we deflect to the estuary of Para, separated from the former by the island Marajó, or St John's, to $506\frac{1}{2}$. The breadth of the stream at Tabatinga is given by Condamine as between 800 or 900 toises; at Obydos, 106 leagues from the sea, and where the tide ceases to be perceived, Martius assigns to it the breadth of 869 fathoms. The greatest breadth of the river is about six leagues. Tabatinga is elevated above the level of the ocean 634 Parisian feet. The direction of the river is almost parallel with the equator, from which its mean distance may be between one and two degrees. Its principal confluent during this portion of its course are, from the south, the Tocantins flowing into the estuary of Para, the Xingu, the Tapajoz, and the Madeira; from the north, the Rio Negro and the Yapura.

The Tocantins joins the estuary of Para at the distance of thirty-three leagues from the ocean, and at an elevation of 189 Parisian feet above its level. The Xingu falls into the Amazons 45 leagues from its northern or main junction with the ocean, and 347 feet above its level, at which place it is about a league in breadth. The Tapajoz joins the Amazons ninety-two leagues above the main entrance into the ocean, at an elevation of 404 feet above the level of the sea. No observation is recorded of the exact elevation of the point where the Madeira mingles its waters with those of the Amazons, but Spix estimates it at 509 feet. Its distance from the ocean in a direct line is nearly 180 leagues. Its breadth varies, according to the season, from 930 to 1000 fathoms; its depth in the middle of the stream from twenty-three to twenty-seven fathoms, and at the shore from five to ten.

The courses of these four rivers are nearly parallel, flowing in the direction of south-south-east. During the greater part of their course they have little perceptible fall. A kind of natural terrace, however, extending in the direction of south-west and north-east, intersects the course of all at an oblique angle. This sinking of the land forms in each a system of cataracts, dividing their course into an upper and lower valley; and the same phenomenon is visible in all the parallel minor streams which flow between them. On the Tocantins these cataracts occur a little to the northward of the fourth degree of south latitude; on the Xingu, to the southward of this line; on the Tapajoz they occur rather to the southward of the fifth degree; and on the Madeira also to the southward of the eighth. The course of the Madeira from its source to the cataracts is 172 leagues, thence to the plain 325. The bed of its waters above the cataracts is estimated at 150 feet higher than that below. The character of the ground remains much the same, being low, and intersected by innumerable canals and lakes; its principal eastern branch only, which inclines towards a serra, retains any characteristics of a clear mountain stream. The extent of the Tocantins, from the lowest cataract to its embouchure, is about sixty leagues in a direct line. The high land even approaches somewhat nearer to the Amazons along the eastern bank of this tributary. The main branch of the Tocantins, that to the east, descends from the high mountain lands of the

north. The more westerly feeders seem to drain off the accumulated waters of high-lying morasses, similar to those which swell the stream of the Madeira. Of the Xingu and Tapajoz above the cataracts almost nothing is known; but every circumstance connected with them seems to indicate a *terrain*, similar to that which gives birth to the Madeira and the western tributaries of the Tocantins.

We now turn to the north side of the great basin of the Amazons. The Rio Negro joins the main stream at a distance of 197 leagues from the ocean, and at an elevation of 522 feet above its level. The principal mouth of the Yapura is at the distance of 326 leagues from the ocean, and the elevation of 571 feet. The course of these two rivers is nearly parallel, both flowing from west-north-west to east-south-east. The Yapura enters the Brazilian territory immediately beneath the Falls of Cupati. The river flows from these falls to the Amazons, an extent of 100 leagues in a direct line, and its fall is estimated at 200 feet. The Rio Negro extends from the frontier fort of S. Carlos, near the junction of the Cassiquari, which carries a portion of the waters of the Orinoco to the Amazons, to Barra do Rio Negro, a distance of at least 200 leagues. The elevation of the last-mentioned situation above the level of the sea is, as we have already mentioned, 522 feet; while that of S. Carlos is 762. The alternate widening and narrowing of the river, as well as its very unequal depth and varying rapidity, lead naturally to the conclusion that it has been formed in the course of ages by the progressive widening of their connecting streams, giving to a system of inland lakes the appearance of one continuous river. The Rio Negro joins the Amazons at an angle so obtuse as to admit of our viewing them in a general way as one continuous line, 397 leagues in length, cutting the equator obliquely towards its western extremity. Parallel to this, at a mean distance of four degrees of longitude, extend the various serras composing the mountain land of Upper Guiana. The flat land which everywhere forms the banks of the lower Amazons and its confluent extends to the base of these hills, which rise at once with considerable abruptness. This territory is intersected by a number of streams of minor consequence, falling partly into the Rio Negro and partly into the Amazons. The most important of these, the Rio Brancas, flows from north to south, and joins the former.

In describing the superficies of the valley of the Amazons, we have found it most expedient to stretch out the streams as the veins upon which the reader was to fancy the superficies of the leaf extended. In turning to the southern and mountainous district of Brazil it will be necessary to call the mountain ranges to our assistance.

If the reader, then, will cast his eye upon a good map of Brazil, he will find, in latitude 19° to 21° south, the mountains of Itacolumi, 5710 English feet above the level of the sea, and of Itambi, 6900. These, and their connecting range, may be considered as the nucleus of the mountain formation of Brazil. Towards the north, and parallel to the coast, extends the Serra do Mar, under the varying names of the Serra dos Esmeraldos, Serra do Frios, &c. Towards the south-west a similar, or rather the same chain (the Mantiqueira), stretches, throwing out spurs on either side, till it gradually subsides into the high plain on the eastern side of the Paranna, near its mouth. By means of the Serra dos Vertentes the Itacolumi connects with the system known under the names of Montes Pyreneos, Serra do Sijada, and Serra do Anambuhy, extending in the direction of west-south-west to the banks of the Paraguay, a little above where it receives the waters of the Paranna. That part of the latter chain termed Montes Pyreneos extends towards the north to the sources of the Tocantins. An important arm of this

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latter, the Itiapamba, but of which little is yet known, runs out to the north-east, and loses itself in the northern seaboard provinces of Brazil. To the west extends the Serra Geral. To the south and the west, in the provinces of S. Paulo and Matto Grosso, these mountains attain an elevation considerably above the level of a high and extensive inland plain. To the north-east, in Minas Geraes and Goyaz, they rise from an infinitely lower level above the sea. Nevertheless, while those mountains which have for their base the high inland plains of Piratininga and Matto Grosso seldom attain a higher elevation than 1900 Parisian feet above the sea, the average height of the Montes Pyreneos is 3900. From the Serra dos Vertentes, in latitude twenty degrees south, flow the streams which combine to form the Rio Francisco; at first in the direction of north, afterwards curving towards the east, till it reach the ocean in latitude eleven degrees south. On the southern declivity of the same Serra arise the highest sources of the Paranna. They flow at first in the direction of due west, receiving numerous tributaries to the north from the Montes Pyreneos, &c., to the south from the Serra do Mantiqueira. Having reached the base of the Serra do Sijada, in longitude fifty-three degrees west, and latitude twenty degrees south, the Paranna assumes a south-easterly direction, and, still receiving numerous tributaries from the two mountain ridges which bound its valley, joins the Paraguay in latitude twenty-seven south, and longitude fifty-eight west. From the south-eastern declivity of the Mantiqueira descends the Uruguay to the estuary of La Plata. From the eastern side of the same ridge, and its northern continuation the Serra do Mar, a number of minor streams flow into the ocean. To the northward of the Serra dos Vertentes, the western streams of the Serra do Mar and the eastern of the Serra do Sijada flow into the Rio Francisco. From the southern declivity of the Serra Geral, and from the western side of the Serra do Anambaty, flow the confluent of the Paraguay. From the northern side of the Serra Geral, and from the central and eastern branches of the Montes Pyreneos, descend the four great tributaries of the Amazons, which join that inland ocean from the south, and the streams that intersect the coast of Brazil between Para and the mouth of the Rio Francisco.

The great constituent of all the mountain ranges of Brazil is granite; the maritime ridge seems exclusively composed of it. The soil on the shore consists of clay, covered in many places with a rich mould, resting on a bed of granite, mixed with amphibole, felspar, quartz, and mica. In the high inland plains of Piratininga we find on the surface a red vegetable earth impregnated with oxide of iron; beneath this a layer of fine argil, intersected with veins of sand; and, thirdly, an alluvial stratum containing a great quantity of iron, resting on mouldering granite, quartz, and mica. A mass of solid granite supports the whole. Between Rio Janeiro and Villa Rica the soil consists of a strong clay, and the rocks are composed of granite. The mountains in Minas Geraes are composed of ferruginous quartz, granite, or argillaceous schistus. Beds of limestone have been found near Sorocabá, near Sabara in Minas Geraes, and in the gold mines near S. Rita. The immense central plateau of Matto Grosso has never been sufficiently explored; but from the nature of its mineral products there is every reason to believe that the granitic formation prevails there also. The Itiapamba, the great chain on the northern coast, consists chiefly of granite. The northern coast from Maranhão to Olinda is bounded by a reef of coral, in many places resembling an artificial mole. It is employed by the inhabitants in building their houses. The valley of the Amazons has been so little explored, and its impen-

trable woods and luxuriant vegetation throw so many difficulties in the way of the geologist, that a long time must yet elapse ere we can hope for satisfactory intelligence. As far as the observations of Spix and Martius extend, its geognostical relations are sufficiently simple. All along the banks of the main stream, and of its tributaries, as long as they continue in the plain, only two mountain rocks are discovered,—the variegated and the green sandstone. Sometimes the sandstone appears in the form of a composite breccia, containing iron; sometimes of a fine-grained crumbling red; sometimes of a hard white stone; but the former is the more prevalent. Beds of marl, clays of different colours, and porcelain clay, occur frequently. On the Tapajoz gypsum occurs in one place. To the south this sandstone formation is bounded by the granitic ridges of the Itiapamba, Montes Pyreneos, and Serra Geral. On the northern ridge of the first-mentioned chain a transition limestone is interposed between the granite and the sandstone. To the north the sandstone is bounded by the gneiss and granite of the Parimé range; to the westward, on the rivers Negro and Yapura, a quartz rock of slaty structure is the basis on which it rests. The western and south-western limits of the sandstone of the Amazons are imperfectly known.

The metallic and mineral products which occur in the geological formations above described are various. Iron is found in vast quantities in the high plains of S. Paulo and in Minas Geraes. Entire hills are composed of brown ironstone and magnetic ironstone. In the latter province a secondary ironstone fills whole valleys, and spreads like a mantle over many of the hills. In Goyaz and Matto Grosso whole districts are covered with formations rich in iron ore. Gold is next, in the extent of country through which it occurs, to iron. It is found in grains intermingled with the latter metal almost wherever it is worked. The chief scene of the exertions of gold-miners has hitherto been in the district of Minas Geraes, among the central mountains, and at the sources of the Paraguay. It is certain, however, that the gold country extends to S. Paulo on the south, and to the mountains among which the Tocantins arises on the north. The soil where the gold is found is ferruginous and deep in many places, resting on rocks of gneiss and granite. The gold rests on a stratum of *cascalho* or gravel, incumbent on the solid rock. It occurs sometimes in grains, sometimes in crystals, and occasionally in large masses. Lead and zinc have been found on the banks of the Rio Abaité, a tributary of the Rio Francisco; chrome and manganese in Parãopeba; platina in other rivers; quicksilver, arsenic, bismuth, and antimony, in the neighbourhood of Villa Rica; and copper in Minas Novas. The diamond occurs in greatest abundance in a district of the Serra do Frio, sixteen leagues from north to south, and eight from east to west, known by the designation of the diamond district. The little that is known of the territory of Matto Grosso, and the sources of the Tocantins, induces a strong belief that this gem is likewise to be found there. It is found in a stratum, of variable thickness, of rounded quartz-ore pebbles, cemented by an earthy matter. They are found along the banks of rivers, and in cavities and water-courses on the loftiest mountains. They occur in immense beds. Häy disregards the distinctions supposed to exist, in the hardness and form of the crystal, between the diamonds of Brazil and those of the East Indies. Lapidaries and jewellers continue to believe that the oriental diamonds have a finer water. Topazes occur in nearly the same localities as the diamond. They are found among a conglomerate of friable earthy talc, quartz, and crystals of specular iron ore; and they are of many colours, yellow, white, blue, aqua-marine, &c. The chryso-

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beryl, ruby, amethyst, and green tourmaline, have been found in the Serra dos Esmeraldos. Martius states that coal appears in the mountain district, but does not specify any locality. He explicitly asserts that none occurs in the valley of the Amazons. Vast quantities of culinary salt effloresce from the soil during the dry season in the upper districts of the Paraguay. Saltpetre is likewise said to be a product of the province, but upon questionable authority. In the upper district of the Rio San Francisco immense deposits of marl occur, strongly impregnated with this latter salt; so strongly, indeed, that the wells and rivulets contain a perceptible solution of it. In the neighbourhood of Arrayal are some caves which yield annually about 2250 cwts. of saltpetre. In Piahy quantities of alum have been found efflorescing from the sandstone. The only fossil remains of animated beings occurring in Brazil of which we have any authentic account are found in these caves. Martius and Döllinger maintained that they correspond in every respect with the Megalonyx of Cuvier. They are scattered about in a fine greasy earth, which covers the limestone to the depth of eight inches. Bones, supposed to have formed part of a mammoth, have been found in Minas Geraes; and similar remains have been discovered in Bahia, near the Rio Solitre, and in Pernambuco. Bones resembling those of the megatherium, found in Paraguay, and now in the cabinet of natural history at Madrid, are said to have been seen near the Rio de Contas. We are not aware that any volcanic appearances have been observed in Brazil, unless the vague stories of hills where subterranean noises are at times heard may be supposed to indicate something of the kind.

Meteorology.

A country so extensive as Brazil, and so diversified in its surface, necessarily exhibits a considerable variety of atmospheric phenomena. The greater portion lies within the tropics, and has consequently the periodical interchange of wet and dry seasons. The narrow valleys, exposed to great heats, and surrounded by lofty mountains, have the vapours forced down upon them, and have a moist atmosphere. The high plains of the interior, and the extensive level region of the northern coast, and the summits of the mountains, are comparatively dry. The wide valley of the Amazons, with its "boundless contiguity of shade," and "lakes, and ocean streams," is most subject to moisture. At Rio Janeiro, nearly on the level of the sea, and in lat. 22. 50. S. the thermometer of Reaumur indicates, on an average, during the months of September, October, and November, a mean temperature of 20° 49'. The highest observed by Spix and Martius was 23° 49', the lowest 15° 49'. The rainy season lasts from October to March, and is heaviest in February. In September the hygrometer stands on an average at 49°, in October at 76°, in November at 85°. Owing to the proximity of the mountains, and the cooler atmosphere at their summits, the mists generally settle around their brows with considerable density towards evening. At Cachoeira, in the neighbourhood of Bahia, about the thirteenth degree of south latitude, and only six Parisian feet above the level of the sea, the thermometer of Reaumur gave, in February 1819, between six and seven in the morning, 17° to 19°, mid-day 25°, sunset 21° 23'. In Bahia itself the temperature at sunset is said to vary in the rainy season (September to March) from 17° to 18° Reaumur; in the dry months from 16° to 17°. The cloudless mid-day sun causes an extraordinary heat in the town; the sea breezes render the mornings and evenings cool; but the nights are warmer. At Oeyras, the capital of Piahy, in about seven degrees of south latitude, and 779 feet above the level of the sea, the thermometer of Reaumur varies in the warm months at mid-day from 29° to 30°. Martius

found it vary during the day as follows:—morning 23° 35', mid-day 24° to 25°, evening 23° 30'. He does not mention in what month this was. The driest months are July, August, and September. The south wind prevails during these months. The climate is healthy. Throughout the course of the Amazons the mean temperature is 22° of Reaumur; the lowest being 13°, and the highest 38°. Thunder storms are frequent and violent in the highest degree. We have no observations with the hygrometer. S. Paulo, situated in lat. 23. 33. S., is 1200 feet above the level of the ocean; and having a westerly declination of the surface of the ground, is consequently shielded from the sea breezes. The average temperature is 22° to 23° of the centigrade thermometer. The rainy season commences in November, and lasts till April. The greatest quantity of rain falls in January. Hoar frost is sometimes seen in the cold months. The prevalent winds are affected by the place of the sun: when he is in the northern signs, south-south-west and south-east winds prevail; when he is in the southern they are more variable. Villa Rica is situated in lat. 20. 27. S. about 3760 English feet above the level of the sea. It is overshadowed by the huge mountain Itacolumi, the summit of which is 5710 feet above the sea, and surrounded by mountains on all sides. Here the average indications of the thermometer are, morning 12° Reaumur, mid-day 23°, evening 16°, mid-night 14°. When the thermometer stood at 16° Reaumur on the summit of Itacolumi, it was found to be at 22° in Villa Rica. The temperature is agreeable enough to the sense, but the thunder-storms are frequent and violent. The wind among the mountain ranges is very variable, but cooling, from whatever direction it happens to blow. The cold weather in the months of June and July has frequently been known to affect the fruits. Respecting the temperature and other skyey influences of the high inland plateau of Matto Grosso we are entirely in the dark; but the Russian expedition under Langsdorff in 1826–29 must have made many important observations, although they have not yet been given to the public. Meteors are extremely frequent in the middle regions of the atmosphere in Brazil. Martius and Spix describe an immense mass of meteoric iron which they examined on their route from Bahia to Oeyras. Its estimated weight is about 17,300 Parisian pounds, it measures from 31 to 32 cubic feet, is extremely hard, and occasionally crystallized, and breaks in some places with a shelly impression.

Except on the loftiest mountains, and on the wide *sertões*, the vegetation of Brazil is luxuriant beyond description. In the mountain passes in the neighbourhood of the sea shore, the conjoint effects of heat and moisture produce a superfluity of vegetable life, which man's utmost efforts cannot restrain. Trees split for piling in the neighbourhood of Rio Janeiro send forth shoots and branches immediately, and this whether the position of the fragments be that in which they originally grew, or inverted. On the banks of the Amazons the loftiest trees destroy each other by their proximity, and are bound together by rich and multiform lianas. In the province of Maranhão, the roots, grasses, and other plants, extending from the shores of pools, weave themselves in time into a kind of vegetable bridge, along which the passenger treads, unaware that he has left the firm earth, until the jaws of a cayman protrude through the herbage before him. The vegetable productions of Brazil have a strong analogy with those of Guiana. The most common are the *compositae*, *legumina*, *euphorbia*, *rubiaceae*, *aroides*, and ferns of the most varied forms. The vegetation of the valleys differs from that of the *campos*, as it again does from that which occurs in the *sertões*. Along the coast, the *mangles* are the most numerous and prominent spe-

cies. The most marked peculiarity of this class of plants is, that the seeds begin to shoot before they drop from the parent plant, and that the drooping branches strike roots into the soil. They are never found inland except where the surface is scarcely elevated above the level of the sea. They flourish from Rio Grande do Sul to Maranhão, converting the land into a morass wherever they are allowed to flourish unmolested. Immediately behind them numerous families of palms raise their graceful heads. The underwood in the neighbourhood of Rio Janeiro consists principally of crotons. Every large river of Brazil has its own appropriate form of vegetable life, giving a peculiar character to its banks. The vegetation of the Amazons may be divided into three classes: 1. that which we find on the islands; 2. the vegetation upon the banks overflowed at regular intervals by the stream; 3. that which stands high and dry. The difference between them consists in the character of the bark and the species of the plants. Brushwood and herbage are nowhere to be seen: every thing tends to the gigantic in size. The most various forms group awkwardly together, crossed and intertwined with leaves. The preponderance of trees with feathery foliage, and with glossy, fleshy leaves, lends alternately a tender and a luxuriant character to the scene, which is in every other respect painful from its monotony. Representatives of the most estranged natural families grow side by side. It is only on the islands, where the willow and some other plants are found in numbers, that we are reminded of the monotony of our northern vegetation. Cocoa trees and the vanilla, *capsicum frutescens* and different kinds of pepper, the cinnamon tree and Brazilian cassia, abound. The flora of all the tributaries of the Amazons is similar to what we have described, until the traveller ascends above the falls, and finds himself in another region. The sources of the Madeira alone offer a partial exception, retaining a vegetation indicative of extensive plains, lakes, and morasses. The vegetation of the southern *campos* (corresponding to the North American *prairies*) is widely different. On the plains of the southern provinces we find scattered about strong tufts of greyish-green and hairy grasses, springing from the red clay. Mingled with these are numerous herbaceous flowers, of the most varied colours and elegant forms. At intervals small groves of trees, seldom exceeding twenty feet in height, so distant that the individual form of each is easily recognised, with spreading fantastic branches and pale green leaves, break the monotony of the scene. Solitary myrtles, numerous varieties of pleasing fruits, and now and then a cactus, add to the variety. A similar vegetation, but with a richer variety of plants, occurs in the diamond district. On the western declivity of the Serra do Mar, and along the upper banks of the Rio San Francisco, extends a wooded country, but of a character entirely different from that which is found in the valleys below. The name Cattingas is applied to the forests in both of the above-mentioned districts, although their characters are entirely dissimilar. The term merely expresses that they cast their leaves during the dry season, and push them forth when the rains return. *Malva*, *euphorbiaceae*, *mimosae*, and such like, are the prevailing types on the Rio Francisco; cactuses, palms, and ferns, abound on the Serra do Mar. In this latter district the Ipecacuan flourishes best. It is, however, in the glowing steppes of Pernambuco that we find the cactus predominant. In the valley of the Paraguary the most striking feature is presented by the water plants, which in one river are sufficiently strong to impede the navigation of a stream both deep and broad.

The jaguar, the tapir, the pecari, the agouti, and many other animals, are common to Brazil with the rest of the South American continent. The *simia* are numerous,

and the *simia apella* and the *simia cedipus* (the smallest known species of ape) are indigenous to the country. The *simia jacchus* has never been seen elsewhere. There are several varieties of bats, of which the *vespertilia sorcinus* and the vampire bat are the most dangerous. Two species of sloth, the *Bradypus tridactylus* and *didactylus*, are not uncommon. The Brazilian birds are celebrated for the beauty of their plumage. "Red, blue, and green parrots," says Malte-Brun, "frequent the tops of trees. The galinaceous *jacus*, the *hocos*, and different kinds of pigeons, haunt the woods. The orioles resort to the orange groves; and their sentinels, stationed at a distance, announce with a screaming noise the approach of man. Chattering manakins mislead the hunter; and the metallic tones of the uraponga resound through the forest like the strokes of a hammer on an anvil. The toucan (*Anser Americanus*) is prized for its feathers, which are of a lemon and bright red colour, with transversal stripes reaching to the extremities of the wings. The different species of humming birds are more numerous in Brazil than in any other country of America. One sort is called by the people the *Gnanthe engera* or winged flower." The gayest butterflies flutter through the air, the blue shining Menelaus, the Adonis, the Nestor, and the Laertes. More than ten species of wild bees have been observed in the woods; and the greater number produce honey. The *cactus coccinellifer*, and the insect peculiar to it, are found in the province of S. Paulo. Ants are numerous and destructive, particularly in the southern provinces. Snakes, of which the *sucuru* is the most venomous, are frequent in moist places. Lizards and caymans abound. The quantity of turtle in the Amazons and its principal tributaries is almost incredible. The waters swarm with fish, of which the only one entitled to notice in a sketch like this is the paranha, the tyrant of the fresh waters, which divides with the cayman the terror and hatred of the inhabitants.

III. *Statistics*.—In the first division of this sketch we have pointed out how Brazil was gradually discovered and peopled. In the second we have attempted to describe the character of the land, and its natural products. It only remains to show the present number, condition, and character of its inhabitants, and how far they have availed themselves of the natural wealth which has been placed at their disposal. In the prosecution of this object we shall endeavour to exhibit a view, 1. Of the amount and distribution of the population of Brazil, according to the latest authorities; 2. Of its social constitution, political, judicial, ecclesiastical, and military; 3. Of the character of its citizens in regard to their capacities of taste and intellect, and to their moral power; 4. Of the state of national industry and wealth in agriculture, manufactures, and trade foreign and domestic.

1. The latest authentic accounts of the population of any province of Brazil which have been received only reach to the year 1823; and the notices of the population at different periods are too scanty, and too indifferently authenticated, to admit of our deducing from them a ratio of increase by means of which we might estimate the present probable number of inhabitants. Besides, the circumstances of the different provinces vary too much to warrant an extension of the estimated ratio to those respecting which the data are defective or imperfect. For these reasons we are under the necessity of stating, with more particularity than we should otherwise have done, the data which we are really possessed of.

From the province of S. Paulo we possess authenticated lists of the population in the years 1808, 1813, 1814, and 1815. For the last of these years we have the numbers of white, black, and copper-coloured inhabitants; of males and females; of the births, deaths, and marriages

Statistics. within the year, specifically stated. The round numbers and in 1815, 215,021. In 1815 this sum total was made up Statistics are, in 1808, 200,478; in 1813, 209,219; in 1814, 211,928; of the following parts:—

WHITES.		NEGROES.				INDIANS.			
Male.	Female.	Free.		Slaves.		Free.		Slaves.	
		Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
54,993	60,110	2,210	2,656	22,917	16,808	20,480	23,805	5,296	5,746

This population of 215,021 souls was scattered over a territory nearly of a square form, extending from twenty to twenty-seven degrees of south latitude, and from forty-six to fifty-five of west longitude. This extent gives an average of less than one inhabitant to each square mile. But 59,139 souls, or nearly one third of the whole, inhabit one city and three market-towns; a fact which affects the average density of the population. The number of births in 1815 was 10,106, of marriages 3120, and of deaths 4636. The deaths were to the whole population in a ratio of one to 46.38; the births were in a ratio of one to 21.28; and the deaths were to the births in a ratio of one to 2.18. According to this proportion the population ought to double itself in little more than twenty-one years. But the real increase from 1808 to 1815 is, as nearly as may be, seven per cent.; and, according to this proportion, the population ought to double itself in less than sixteen years. Making allowance for the influx of emigrants from Europe, and the increase of manufactures, this latter ratio is probably nearer the truth. We have therefore for S. Paulo, at the close of 1831, a population of 430,042; but owing to the establishment of manufactures, and the influx of settlers, it is probably even more numerous.

Minas
Geraes.

The province of Minas Geraes is nearly 400 miles in length from north to south, and 280 in medium breadth. It lies due north of S. Paulo, more inland, equally elevated, and with a more uneven surface. Its population in 1808 was as follows:—

RACES.	FREEMEN.		SLAVES.		TOTAL.
	Males.	Females.	Males.	Females.	
Whites.....	54,157	52,527	.....	.....	106,684
Half Blacks...	64,406	65,250	7,857	7,880	145,393
Negroes.....	23,286	24,651	86,849	46,186	180,972
Total.....	141,849	142,428	94,706	54,066	433,049

An estimate of the population of the same province in 1820 makes it amount to 456,675 freemen and 165,210 slaves; in all, 621,885. This statement is not however sufficiently authenticated. It is worthy of remark, that in 1808 Minas contained, with only the double of the population of S. Paulo, three and a half times as many black slaves, and nine times as many free negroes. The disproportion betwixt the numbers of male and female slaves is yet more glaring than in the last-mentioned province. The population of Minas is also less stationary. The Comarca of Villa Rica, which was held to contain only 72,209 inhabitants in 1813, is said to have had 78,618 as early as 1776. It may be remarked, however, that of late years agricultural and manufacturing industry have borne more healthy proportions to gold finding. Could we trust in the accuracy of the return of 1820, the population of Minas must have doubled since 1808, and must now amount to about 860,000 souls.

Bahia.

The population of Bahia amounted in 1823 to 592,908

souls, who were thus distributed over a surface of 84,000 square miles:—

Comarca da Bahia.....	362,503
Comarca da Jacobina.....	56,000
Comarca dos Ilheos.....	75,569
Capitania de Sergippe d'el Rey.....	98,836
	592,908

The great superiority of numbers in the Comarca da Bahia is mainly owing to the number of negroes employed in the four hundred *engenhos* (sugar factories) within the *reconcavo*, or valley surrounding the great inland sea, upon which the city stands. By referring to the table given above of the population of S. Paulo, the reader will see that there is a marked excess of male above female negro slaves; a proportion which also obtains in other provinces of Brazil. This fact, and the hard labour to which the class in question is condemned, forbid us to assume an equally speedy increase of their numbers with that of the other inhabitants. It is only in Sergippe d'el Rey that we have any data for guessing at the real increase.

In 1808 it contained 72,236
In 1823 98,836

An increase in fifteen years of 26,600; or a little more than one third of the original population. Assuming the same ratio of increase to have held throughout the province since 1823, it would give us, for 1831, 790,544 souls.

We possess a return for Pernambuco in the year 1823, Pernambuco of 234,000 inhabitants. Subjoined to this return are lists of buccos the population of the northern sea-board provinces, Alagoas, Paraiba, Rio Grando do Norte, and Seara. These districts are extremely similar in their physical characteristics. The total of their inhabitants in 1823 was 654,800; while the number resident in Seara was 140,000. According to the parish registers, the same province, in 1813, contained 131,140; giving an increase of 8860, or something more than one fifteenth, during ten years. Other but less trust-worthy accounts make the population double in twenty-five years.

The two provinces of Para and Rio Negro include the Para whole basin of the Amazons. In 1820, a priest, resident at Rio Negro Para, who had bestowed great pains on the subject, stated the result of his investigations to Drs Spix and Martius as 83,510 for both captaincies. Of these he attributed 68,190 to Para, and 15,320 to Rio Negro. A return, in like manner including both provinces, was presented to the same gentlemen in 1823, representing their united population as 173,125. It appears that the wild Indians are reckoned here, and that they had been omitted in the return of 1820. In 1814 the population of Rio Negro was stated, in a very distinct and articulate report, to amount to 15,235 souls, being only 85 short of the sum attributed to it in 1820. This is in some degree accounted for by the fact that Martius, in the latter year, found the population in more than one district much decreased below what it had been six years before. Of the total population of Rio Negro 11,435 were Indians. Upon such data no calculations of

Statistics. the probable increase are admissible. The following table enumerates the latest returns of every province from which any have been made, stating at the same time the authority upon which they are here given.

Province.	Date of Return.	Authority.	Population.
Rio Grande do Sul, (Environs of Rio Grande).....	1806	Mawe.....	100,000
Uruguay.....	1801	Henderson.....	14,010
S. Paulo.....	1815	Martius.....	215,021
S. Catharina.....	1813	.....	33,049
Rio Janeiro (town alone).....	1817	.....	110,000
Espirito Santo.....			
Porto Seguro.....			
Bahia } Sergippe d'el Rey }	1823	Official returns	592,908
Minas.....	1820	De Barbacena..	621,885
Goyaz.....	1821	Official returns	37,250
Matto Grosso.....			
Pernambuco.....	1822	De Barbacena..	234,000
Alagoas.....			91,800
Paraiba.....			120,000
Rio Grande do Norte.....			64,000
Seara.....			140,000
Piahy.....	1819	Official returns	71,370
Maranhão.....	1821	Adr. Balbi.....	182,000
Gram Para.....	1820	Martius.....	68,190
Rio Negro.....			15,320

The total of these sums amounts to 2,809,803. It must, however, be taken into account that some of the returns are of an old date; that for three provinces there are none at all; and that in the cases of Rio Janeiro and Rio Grande do Sul only the inhabitants of the capital and suburbs are enumerated. We are therefore entitled to assume that in 1820, the medium year, the population of Brazil would probably have been underrated if estimated at 3,000,000. The time in which the population of Brazil doubles itself appears to vary in different provinces from fifteen to thirty years. The circumstances of the last ten years are such as to entitle us to believe that the inhabitants of that empire are now little short of 5,000,000.

This population is composed of the descendants of the aborigines, of negroes, and of persons of European descent. Here, as everywhere else, the copper-coloured race gives way before the other two. It is calculated that, on an average, 50,000 negroes are annually imported into Brazil. The great disproportion, however, between the numbers of males and females, noticed above, and the natural tendency of human beings to multiply slowly in a state of slavery, seem to prevent any thing like a corresponding increase of numbers. By means of the numerous immigrations from Europe, the white race has hitherto been able to keep its ground. Of all the crosses between the different races, the mulatto seems to take most kindly with the soil and climate of Brazil. In S. Paulo in 1815 the total of white persons was 115,103; of negroes, 44,591; of Indians, 55,327. In the city of Rio Janeiro in 1817 a native Indian was a rarity; of 110,000 inhabitants it was estimated that two thirds were negroes. In Minas in 1808 the number of Europeans was 106,684; of persons of mixed blood, 145,393; of negroes, 180,972. The united population of Gram Para and Rio Negro amounted in 1820 to 83,510 souls. Of these, 50,000 were, according to a rude estimate, Indians. In 1814 Rio Negro alone con-

tained 15,235 inhabitants, of whom 11,435 were Indians, 3,071 free whites and negroes, and 729 slaves without distinction of colour. The law of Brazil admits the distinction between freeman and slave; but once free, every individual without regard to colour, is equal in the eye of the law.

2. As nothing has a greater share in impressing upon a Political nation its peculiar character than the form of its government, it will be necessary to make ourselves masters of the social institutions of Brazil, before we can attempt to judge of its citizens either in their moral or economical relations. Brazil is a constitutional monarchy, without a privileged aristocracy. In such a state the monarch can only act in consonance with the laws. It will therefore be advisable, in the first place, to give some idea of the representative legislature, which is thus endowed with the power of regulating his actions.

The legislative power is vested in the general assembly, consisting of two chambers, that of deputies and that of senators. The deputies and senators are nominated by indirect election; the body of qualified citizens choosing the electors in parochial assemblies, and the latter nominating the provincial representatives. The existing provinces, enumerated above under the head of population, may be subdivided, and each portion erected into a province whenever the increased number of inhabitants justifies such a step. The qualification for an elector is an annual income of 200 milrees; that of a deputy an income of 400. Minors, military officers, priests, monks, servants, and paupers, are incapable of voting; naturalized foreigners, and persons not professing the religion of the state, are incapable of being elected. The deputies are elected for four years, in each of which there must be a session of four months, opening on the 3d of May. The senators are elected for life. Every province has a number of senators, equal to half its number of deputies; but they are nominated in triple lists, from which the emperor selects one third at his pleasure. A senator must be forty years of age, and possess a clear annual income of 800 milrees. The salary of a senator is one half more than that of a deputy. Each house nominates its own officers. When the two houses sit in general assembly, the president of the senate presides, and the senators and deputies sit promiscuously. They assemble in this way to take the oath of the emperor; to elect a regent; to nominate a tutor to the emperor when minor; on the death of an emperor, to institute an inquiry into the administration which has just concluded, and to reform abuses; and to select a new dynasty, in case the old has become extinct. They sit apart, and proceed by way of bill, when they make laws, interpret, or suspend them; they determine the public charges, and assess the direct contributions; fix the ordinary and extraordinary forces by sea and land, on the report of the government; authorize the contraction of loans by government; regulate the administration of national domains, and decree their alienation; create and suppress public employments; control weights and measures, and the standard of exchange. The chamber of deputies has the initiative in taxes, in recruiting, and in the choice of a new dynasty. The senate has the exclusive privilege of taking cognizance of offences committed by members of the royal family, counsellors of state, senators, and deputies, during the time of session; of enforcing the responsibility of secretaries and counsellors of state; of convoking the assembly, in case the emperor fail to do so within two months after the period fixed by law; and also of calling it together on the death of the emperor. The assembly, in addition to its legislative powers, is likewise entitled to act as the emperor's great council of state.

In accordance with the counsels given and the laws

Statistics. enacted by this body, the emperor exercises the supreme executive functions of the state. This he does through the instrumentality of his ministers, who are responsible for treason, corruption, abuse of power, acts contrary to the liberty, security, or property of subjects, and waste of public property. From this responsibility they cannot escape upon the plea of orders from the emperor. The executive functions are, the convocation of the general assembly; the nomination of bishops, governors of towns and provinces, commanders by sea and land, and ambassadors; the formation of alliances and the initiative of foreign negotiations; the declaration of peace and war; the granting letters of naturalization, &c. The ministers are, secretaries of state, of transmarine affairs and marine, and of foreign affairs; a head of the treasury, with a grand and second treasurer, a director of the bank, and a fiscal; a head of the board of trade; a president of the consistorial board; a commander in chief, and a head of police, with his lieutenant. To these is adjoined a council of state, composed of ten members nominated by the emperor, and having the imperial prince, if of age, for president. With these counsellors and assistants the sovereign manages the national affairs. Matters of local economy and municipal police are regulated in the provinces by presidents nominated by the sovereign, and removable at pleasure, checked by elective chambers of districts; in the cities and towns, by councils of management elected by the inhabitants.

Financial system.

The financial arrangements of Brazil fall under two heads, the general and national, administered by the head of the treasury and his subordinates, under the control of the chambers; and the local, exercised by the provincial authorities, under the corresponding check of "the councils general of the provinces" and the municipal councils. The general assembly controls the management of those revenues which, formerly appertaining to the crown, are now termed national; it determines the annual expenditure, and assesses those taxes which are necessary in addition to the income from the domains and regalia. The customs payable on goods passing from one province to another have been remitted. All exports of Brazilian produce pay a duty of two per cent. Imports from Portugal and England pay a duty of fifteen per cent. Foreign wines pay thrice the duty laid upon those of home growth; and foreign brandies twice and a half. All other merchandises pay a duty of twenty-four per cent. Slaves pay an additional duty, the half of which is deposited in the bank to form a fund to aid in settling colonies of Europeans. The direct taxes are, *dizimo*, a tenth levied upon all products of agriculture, pasturage, and the fisheries; *subsídio nacional*, an import upon fresh meat, hides, brandies, and cotton cloth prepared within the land; a capitation tax for the bank of Brazil from every merchant and tradesman; a tax upon official incomes, &c. These are collected into the treasury, partly by the agency of salaried officials, but more frequently by means of the Bank. This institution farms most of the regalia; and, in the matter of customs and imposts, it is in the habit of making advances upon the pledge of the yet unliquidated duties. The financial arrangements of the provinces are those of the state in miniature. The repeal of all duties paid upon the transit of merchandise from one province to another; the immense sums surreptitiously carried off by the greedy court of Joam VI. when he fled from Rio; and, above all, the commotions of the last ten years, co-operating with the inefficiency of the late head of the government, threw the finances of Brazil into a state of derangement from which they have not yet recovered. In September 1823 the state debt amounted to 30,500,000 cruzadoes. The estimated ordinary revenue for the half year, 1,767,000 milrees, was less than the

expenditure by the sum of 900,000. The local revenues were also equally deficient. The annual deficit of Minas Geraes amounted to 60,000 milrees; that of Goyaz to nearly 20,000; that of Matto Grosso to 10,544; that of S. Catharina to 34,870; and so of the rest. The charges thrown upon the treasury by these deficiencies amounted to 280,000 milrees yearly. Recourse has been had to forced loans and contributions, to donations, sequestrations, and, finally, to a foreign loan; but the difficulties still remain unsubdued.

There are in Brazil justices of the peace, elected at the same time and in the same manner as the deputies. Without previously attempting a reconciliation with his adversary before one of these, no person is entitled to bring a cause into court. Trial by jury is the constitutional form in all courts of the first instance, both in civil and in criminal cases. There are courts of appeal in the principal cities. In Rio there is in addition a supreme tribunal of justice, in which judges, selected from the other courts, preside according to their seniority. The duties of this tribunal are to permit or refuse the revision of causes proposed to be submitted to the courts of appeal; to inquire into abuses committed by its own officers or those of other courts, of persons connected with the diplomatic body, and of the presidents of the provinces; and to investigate and decide on disputes respecting the jurisdiction of the provincial courts. In the courts of the first instance, which are twenty-four in number, one in each comarca of the empire, a judge entitled *Ouvidor* presides. Appeals lie from these to the courts of the second instance, at Para, Maranhão, Pernambuco, Goyaz, and Bahia, whose decisions are reviewable by the *Relação* of Bahia; Rio Janeiro, Minas Geraes, Matto Grosso, and S. Paulo, are reviewable by that of Rio. All judges are responsible for abuses of power, and for corruption, but can only be displaced in consequence of a sentence. In an imperfectly settled country, and where some traces of the feudal character of its first organization may yet be found in the language of the laws and the intermingling boundaries of districts, disputes regarding jurisdiction are of too frequent occurrence. The body of the law has been transplanted from Portugal, occasionally modified by new relations or later enactments, but, in the main, a scarcely coalescing mixture of the Roman and canon law, with enactments the native growth of the mother country.

The Catholic Apostolic Roman religion is the religion of the empire. All other religions are tolerated, and allowed a domestic celebration of their rites, but without any external form of temple. The church of Rome being in its leading characteristics the same throughout the world, a particular description may be here dispensed with. There is one archbishopric in Brazil, that of Bahia. Its suffragans are the bishoprics of Rio Janeiro and Pernambuco. Maranhão, on account of the difficult navigation between that town and Bahia, had its bishopric subjected to the archiepiscopal jurisdiction of Lisbon. It is now independent. The diocese of Para was so from the first. The district originally subjected to the bishop of Rio Janeiro has subsequently been subdivided, in order to erect the additional dioceses of S. Paulo and Mariana, and the prelacies of Goyaz and Matto Grosso. The whole of Brazil is subdivided into parishes, to each of which one or more officiating priests are attached. Government has expended little money on the clergy, but this omission has been abundantly supplied by legacies and donations from individuals. There are several cloisters of Franciscans and Dominicans, and an immense number of Hermits.

Among the ministers of the empire, we have mentioned a head of the literary department. One of the most important taxes imposed by government is the *subsídio* ment

Statistics. *literario*, an impost for the maintenance of teachers, upon every ox killed in the shambles; upon rum, and in some provinces upon the salted provisions brought from the interior. In every *villa* (market-town) there is a "Latin school," an institution for teaching the elements of language and an acquaintance with the classics. In S. Paulo, Bahia, and Maranhão, we find gymnasia, with somewhat higher pretensions. In every episcopal seat there is a theological seminary, in which candidates for orders are obliged to pass a certain number of years in the study of philosophy and divinity. In 1827 two schools of law were instituted, one at S. Paulo and one at Pernambuco. The course lasts five years. The first two are devoted to prelections on the law of nature and of nations, and an analysis of the constitution; during the third and fourth, the laws of Brazil, maritime and mercantile law, are the subject of study; during the fifth, political economy and finance. For such as wish it, there is a course of canon law during the second year. Rio de Janeiro possesses a lyceum and an *aula de cirurgia*. In the former of these are taught Latin, Greek, French and English, rhetoric, geography, mathematics, philosophy, and theology. In the latter, the students are bound to attend, during the first year, anatomy, chemistry, and pharmacy; during the second, the same, with the addition of physiology; during the third, pathology, therapeutics, and the practice of medicine; during the fourth, surgery and midwifery; during the fifth, clinical surgery. The students have admission to the military hospital, and such as choose may attend the lectures on botany and natural history, the botanical garden, and the museum. There is also in the capital a military and a commercial academy. In addition to the public institutions for the promotion of education here enumerated, schools of mutual instruction have of late years been founded in most towns and cities by private individuals.

Army and Navy. 6. The constitution of Brazil recognises the necessity of a permanent naval and military force, but without determining its amount. It can only be assembled by legitimate command, and is under the executive power. Officers of the army and navy cannot be deprived of their commissions but by the sentence of a competent tribunal. In 1826 the regular army was estimated by General Miller at from 15,000 and 16,000 men. Of these, 3500, consisting partly of foreigners, were stationed in the capital; and the rest were dispersed throughout the provinces. Thus, in S. Paulo there might be a regiment of dragoons and one of infantry, in detachments on the coast, at the capital of the province, and at the custom-houses on the frontier. In Bahia the troops of the line generally amounted to upwards of 3000 men, infantry, artillery, and cavalry. In 1823 the Brazilian navy consisted of one line of battle ship carrying seventy-eight guns; three frigates carrying forty-four, thirty-eight, and thirty-two; two corvettes carrying thirty-two and twenty-two; two schooners carrying twenty and sixteen; a fire-ship and a gun-boat. Besides the regular troops, every Brazilian capable of bearing arms is enrolled either in the *milicias* or the *ordenanzas*. The former are commanded by chiefs of their own appointment (*coroneis*), having under them a major from the regular army, appointed by government; they are subject to military law, and liable to serve, in case of need, beyond the limits of the province; they receive no pay. The *ordenanzas* are commanded by *capitães mórés*; they are only liable to serve in case of invasion; and they discharge in a great measure the duties of a local police. General Miller speaks slightly of the regular troops of Brazil; and here we believe him to be in the right. Its *milicias* and *ordenanzas* he regards with the supercilious contempt natural to a military man; and here we believe him to be in the wrong.

Statistics. 3. It is obvious, from the insufficient establishments for general education, that the intellectual development of individuals must be achieved in a great measure by unaided exertion. In the more thinly inhabited districts devotion to such pursuits must not be expected in men exclusively occupied in procuring subsistence and securing self-defence. Even where the population is more dense, a lazy feeling of animal comfort represses the exertions of the majority. It is among the more aspiring class, who aim at the learned professions or state employment, and who are consequently obliged to cultivate their minds, that we must look for that attachment to intellectual pursuits which is rarely acquired except from habit. In the theological seminaries established at the seat of each bishop, little more is inculcated than a knowledge of the classics, an outworn scholastic system of logic, and a knowledge of the routine duties of a priest. This is a system of tuition only calculated to deaden the mental faculties. The school of medicine in Rio Janeiro, from the attention bestowed upon practical surgery and anatomy, has done more to awaken the mind; but this is only one bright spot in a realm of darkness. The number of situations under government requiring a certain knowledge of practical mathematics and natural history, rendered necessary by the system of working the mines so long pursued, has been more efficient in diffusing throughout the empire a knowledge of and a taste for these kindred pursuits. The number of foreign engineers and naturalists encouraged to settle in Brazil has rendered the natives in some measure acquainted with all that has been of late achieved in Europe in the mathematical and experimental sciences. Late events have forced upon the inhabitants a number of political questions, which, coming home to every man's business and bosom, have excited the whole community. As yet, however, the intellect of Brazil seems to be rather in the process of awakening to a consciousness of its existence, than capable of effecting any thing. Printing presses are everywhere sought after. In 1823, Rio alone had thirteen political journals, the other towns and provinces in proportion. Several attempts had been made to establish periodical publications devoted to geographical and natural science. New libraries were founded, and the old ones extended and better arranged. But nothing new has yet been produced in Brazil beyond the contribution of additional facts in mineralogy, botany, and astronomy. The power of systematic and independent thinking has not yet shown itself.

In the matter of taste, the Brazilians have only added one poet to the literature of the Portuguese language. Gonzaga was at one time ouvidor in the Comarca of S. João d'el Rey in Minas Geraes; but having taken part in an attempt to revolutionize the province about the commencement of the French Revolution, he was banished to Angola, where he afterwards died. His poems are all lyrical. A collection of them has been published under the title "*Marília de Dircea*;" and many more are preserved by popular tradition. They are characterized by delicacy of fancy and diction, and tenderness of feeling. Everywhere in Brazil a strong native taste for music evinces itself. The native tribes, in contradistinction to the negroes, who evince feeling only for melody, are deeply sensible of the charms of harmony. Among all classes, however, the guitar and song form the principal evening's amusement. Spix and Martius found this to hold good among the courtiers of Rio de Janeiro, among the sturdy Paulistas, on the Sertões of Minas, and in the mercantile Bahia. The simplicity of the national instrument is unfavourable to the culture of a high order of music. In Rio, however, much was done under the patronage of Dom Pedro for the cultivation of the science, and not without effect.

Statistics. An academy of the fine arts has likewise been established in that capital for many years; but its ill success seems to betray a want of feeling for the beauties of painting and sculpture. The drama, which calls into requisition all these arts, is at a very low ebb. The actors are chiefly vagabond mestizos; and the decorations of the stage are on a par with the performers. In art and literature, as in science, those Brazilians who are enlightened enough to find pleasure in such pursuits, rely entirely upon the productions of other countries, principally those of France and England. The sensibility to imaginative pleasure exists, but the power of producing the objects which excite it is wanting.

We have prefixed these brief sketches of the progress of the Brazilians in knowledge and art to that of their moral condition, because the state of the latter is mainly dependent upon them. Only where wealth and a complicated state of society have developed the intellectual powers and refined the sentiments, can any thing approaching to elevated and consistent goodness be found. Within the limits of Brazil, and even without having recourse to her savage population, may be discovered specimens of every stage of moral development. In the populous cities on the coast, and in the seats of local government in the interior, there are men entitled to rank with the educated classes of any country in Europe. More enlightened minds, with greater power of self-denial and endurance, have been displayed nowhere than in the course of the Brazilian revolutions. The mass of the people, however, is entirely destitute of education, unrefined, and the creature of impulse. The continuance of the slave-trade tends yet more surely to harden their minds. The larger towns present the same spectacles of brutal excess in animal enjoyment among a certain class that we find in Europe. Murders are more frequent. The most elevated class of the population, in respect to the general diffusion of the sense of moral obligation, is to be found in S. Paulo and in Minas Geraes. The source of the superiority of the former has been adverted to in our historical sketch. In the latter, it may fairly be attributed to the prevalence of that sect which still persists in expecting the return of king Sebastian. Whenever a sect adopts as one of its first principles a high standard of self-control, we may be sure that the effect will be to ennoble the majority of its disciples. The scattered population towards the interior frontier presents not unfrequently specimens of the most daring defiance of every dictate of religion, reason, or human feeling.

The branch of national industry includes, agriculture, manufactures, and fisheries, or production; commerce, foreign and domestic, or distribution.

Agriculture.

4. In Rio Grande, the most southerly province of the empire, the soil is principally in pasture, and the chief occupation of the inhabitants the feeding of cattle. The animals are of a large size, and the herds are numerous. They are allowed to wander at large under the superintendence of a few half wild Creoles and Negroes. There are no dairy establishments. Butter and cheese are only made on particular occasions, and even milk for coffee is not always to be had. The quantity of wheat grown in the province is considerable, but farming is carried on in a slovenly manner. The grain is dirty, and apt to ferment. The island of S. Catharina, immediately to the north, has been cleared of its timber for the purpose of ship-building, and is almost entirely under cultivation. The agricultural produce of the island in 1812 is stated in an official paper to have been:—Mandioca meal, 388,361 alqueires; maize, 16,968 ditto; garlic, 16,506 ditto; onions, 10,472; wheat, 3365 ditto; rice, 18,723 quintals; coffee, 12,592 ditto; cotton, 2270 ditto; flax, 1798 ditto; mo-

lasses, 7118 pipas; sugar, 712 quintals; ox-hides, 35,900. Statistics. The wheat, it will be observed, bears but a very small proportion to those products which are most successfully cultivated within the tropics. What is commonly called in England colonial produce, begins here to be the staple, and continues so along the whole coast of Brazil, until we reach the equator. The province of S. Paulo is most densely inhabited, and consequently best cultivated along the coast. This is the reason why, with the finest and most extensive pastoral country in Brazil, the value of its cattle in 1814 did not amount to one fifth of the whole agricultural produce of the province. Coffee either does not succeed, or is not a favourite object of cultivation; for the quantity produced by this province is less than that which is grown in S. Catharina. Sugar has begun to improve, and continues to do so as we move northward. The produce of the sugar plantations of S. Paulo in 1814 was 122,993 arrobas of sugar, and 233 pipas of rum, independently of an immense quantity of sugar syrup prepared for home consumption. The quantity of mandioca raised in the same year was 111,460 alqueires; of maize, 723,989 ditto; of rice, 120,860; while of wheaten flour there was only 5050 arrobas. The colonial produce, in addition to sugar, was, cotton, 54,222 arrobas; tobacco, 9596 ditto; coffee, 4867 ditto; castor-oil, 179 canada. The most important agricultural products in the province of Rio Janeiro are sugar, coffee, and cotton. The first mentioned is cultivated most extensively between the mountains, and in the warm and moist district. In the neighbourhood of the capital itself we find the greatest quantity of sugar plantations. In 1817, 60,000 arrobas of sugar were exported from Rio, but whether it was all produced within the province, does not appear. The coffee of Rio Janeiro is esteemed the best in Brazil. This is owing to the instructions and example of Lesene, an intelligent gentleman of St Domingo, who, driven from home by the revolution in that island, commenced a plantation in the neighbourhood of Rio, and, through the superior demand occasioned by the excellence of his berries, stimulated his neighbours to follow his example. Rio produced 299,000 arrobas of sugar in 1817, and 470,846 in 1820; an immense increase in quantity, independently of the improvement in quality. We have no exact accounts of the quantity of cotton annually collected in this province. It is said to yield a less lasting cloth than the cotton raised in the more elevated and drier districts of the country. Some attempts made to introduce the tea plant in the neighbourhood of Rio have failed, apparently from want of perseverance. The trees look healthy and luxuriant; and a slight tinge of earthiness, which is perceptible in the flavour of the decoction of the leaf, is attributed by naturalists solely to the want of a sufficiently long acclimatization. A quantity of tobacco is raised in the islands of the bay of Rio; and, together with what is brought from Espirito Santo, it may amount, one year with another, to 30,000 quintals. Of the agriculture of the province just named, and its neighbour Porto Seguro, the preceding sentence contains all the information we have been able to collect. The chief agricultural product of Bahia is sugar, and the most luxuriant growth of its sugar canes is in the Reconcavo in the immediate neighbourhood of the city. The surface of the ground in its original state is covered with marshy hollows, which, when drained of their superfluous waters, are found filled with a light alluvial earth, most favourable to the growth of the sugar cane. This gift the skill of the Bahian planters has turned to the best advantage. Tobacco was wont to come next to sugar in the Reconcavo; at present it is most extensively cultivated in the neighbourhood of Cachoeira, though even there a falling off has been observed. There

Statistics. is proportionally little coffee raised in Bahia, and that little in the Comarca dos Ilheos, the rudest and most wretched district of the province. The fruit is much inferior to that of Rio, probably on account of the slovenly manner in which it is gathered and dried. Rice returns from two to three hundred times the seed. In the year 1817 the sugar raised in Bahia was estimated at 1,200,000 arrobas, the tobacco at 660,000, the coffee at 10,000, the rice at 18,000. Maize thrives here, but its cultivation is much neglected. An enterprising Swiss in 1817 set the example of forming artificial meadows in the neighbourhood of the city; and they are said by eye-witnesses to have equalled the best in England. The high price of fodder secured him an ample reward. The chief difficulty he encountered arose from the poisonous snakes which swarm in all marshy places. All kinds of European fruits and vegetables succeed in the Reconcavo, but are more exposed to the depredations of ants, snails, and birds, than native plants. The chief products of Pernambuco are vanilla, cocoa, rice, sugar, and cotton. The quality of the last-mentioned article grown in this province was at one time esteemed as the best in the world. Of late years it has much deteriorated, from neglect in the gathering and cleaning. Notwithstanding, the quantity exported in 1829 amounted to no less than 80,000 bags. In the interior of this province grazing is carried on to such an extent as has procured for it the title of the Switzerland of Brazil. The staple commodities of Seara are cotton and sugar. The other provinces along the coast, including Maranhão, exhibit nothing different in their agricultural products from those last described; on the shore the sugar-cane, farther inland cotton, and in the interior cattle. The produce of Gram Para presents nothing materially differing; that of Rio Negro, consisting chiefly of natural produce, scarcely comes under the head of agriculture. The provinces respecting the agriculture of which we have now to speak are the three great inland districts, Minas Geraes, Goyaz, and Matto Grosso. Of the last, too little is known to entitle us to say any thing. The agriculture of Goyaz is trifling, and almost identical in character with that of the interior of S. Paulo. The southern portion of Minas consists chiefly of pasture lands. Some attempts have been made to introduce oats, barley, and wheat; but these cerealia were found to run uniformly to straw, and their ears to ripen unequally. In the northern comarcas cotton has been cultivated with great success. In point of quality that of Minas Novas is esteemed second to none but that of Pernambuco. There seems, however, to be a great waste of surface in the mode of culture generally adopted. The land is first cleared for the plantation by burning, which is effected during the dry months. In January a number of holes are made in the earth about two or three feet apart, and five or six seeds are dropped into each and covered lightly with earth. The harvest occurs in the September of the second year. In the course of two years fresh ground is chosen and the same process repeated. The cotton-grower allows as long an interval as he can afford to elapse before he returns to a spot which has already been cultivated. This superficial view of the agriculture of Brazil argues a country of the most exuberant fertility, in which are not reared many products of the earth that might succeed; while the limited number produced, with the exception of coffee in Rio, and sugar in Bahia, are cultivated in a rude and slovenly manner. Cacao, ginger, various kinds of pepper, tobacco, and indigo, all of which experience has shown to be suited to the soil and climate, are neglected. Oxen, horses, and mules, are rather the gift of nature than the reward of assiduous attention.

Manufactures. Except a few rude manufactures for family use, this branch of national industry is in Brazil confined to mining

Statistics. operations, the smelting of metals, the polishing of precious stones, the manufacture of salt, ship-building, tanning and dressing hides, and the making of oil. In regard to the first mentioned, it may be observed that one most important mineral, coal, has hitherto only been discovered at two places in Brazil, Bahia and Rio Grande. At both, however, the smallness of the quantity and the situation of the veins has rendered working it with advantage impossible. On this account it has been necessary to employ charcoal in obtaining the metals from the ores; and hence everywhere in the neighbourhood of mines charring is a business which employs a good many hands. The wasteful manner in which the operation has hitherto been carried on is already beginning to be felt even in the immense forests of Brazil. Of late, however, scientific foresters have been encouraged by government to emigrate from Europe.

The diamond washings, with the exception of a few, Diamond of which but little is known, are confined to the diamond mines. district in Minas Geraes, and are still conducted on the ill-judged system of a government monopoly. The cascachao, mentioned above, is dug up and removed to a convenient place for washing. As much is raised during the rainy months as is expected to give employment to the slaves for the other six. It is deposited in heaps of from five to fifteen tons. A shed is erected in the form of a parallelogram twenty-five or thirty yards long and about fifteen wide, composed of upright posts supporting a thatched roof. A stream of water is conveyed down the middle of the area of this shed, covered with strong planks, on which the cascachao is laid two or three feet thick. On one side of the canal is a flooring of planks from four to five yards long, imbedded in clay, extending the whole length of the shed, and having a slope from the canal of three or four inches to a yard. This flooring is divided into twenty compartments or troughs, each of about three feet in width, by means of planks set on edge. The upper end of each trough communicates with the canal. Three overseers take their seats at equal distances on high chairs placed on the heaps of cascachao, on the side of the canal opposite to the troughs. As soon as they are seated a negro enters into each compartment, provided with a short handled rake, with which he draws to him fifty or eighty lbs. of cascachao. He then lets in water upon this, and keeps stirring it with his rake until the earthy particles are washed off; upon which, throwing out the largest stones, he carefully examines the rest for diamonds. As soon as he finds one he rises and holds it out between his finger and thumb; an overseer receives it from him, and deposits it in a bowl half full of water, suspended from the centre of the structure. At the close of the day's labour the diamonds obtained are taken from this deposit and delivered to the principal overseer, who weighs and registers them. On an average the mines yield 20,000 carats annually. The establishment is burdened with a load of debt incurred to foreigners for advances of money at the time that government first took it in hand. It is calculated that the diamonds cost government 33s. 9d. per carat. The washings give employment and support to a population of about 6000. The trade in gems which have not been deemed of sufficient importance to be claimed as regalia, centres in Minas Novas. The dealers in precious stones have their residence for the most part in Chapada. The greater part are sent in a state of nature to Bahia and Rio Janeiro; some, however, are polished, rudely enough, in the neighbourhood.

The gold country extends over Minas Geraes, Goyaz, Gold Matto Grosso, and part of S. Paulo. In all these districts the mines. winning of this metal is pursued in a manner exactly similar. It is found either in the beds of rivers, or in veins, at times

Statistics. twenty feet under the surface, at times close under the roots of the grass. Like diamonds, it is found intermingled with *cascalhao*. This mass, with the auriferous particles, is removed from its site to a convenient place for washing. Where water of a sufficiently high level can be obtained, the ground is cut into slips twenty or thirty feet wide, two or three broad, and one deep. Near the bottom is a trench two or three feet deep. On these steps the *cascalhao* is deposited, and on each stand six or eight negroes, keeping it in motion with shovels as the water flows gently upon it from above, until the whole is reduced to liquid mud and washed down. In the trench the particles of gold, from their weight, quickly precipitate. Other negroes are busy clearing away the stones and removing the surface mud. After five days' washing the precipitate is carried to some convenient stream. Here each negro is provided with a bowl of a funnel shape, about two feet wide at the mouth, and five or six inches deep. Standing in the stream, he takes about six lbs. of the sediment into his bowl, admits regulated portions of water, and keeps moving the sediment until the gold deposit itself at the sides and bottom of the vessel. He then rinses the bowl in a larger vessel of clean water, and begins again. This operation occupies about five minutes. When the particles of gold in the sediment are very minute, troughs similar to those employed in diamond-washing, but longer and narrower, are constructed. On their bottoms are stretched hides, tanned with the hair on, or pieces of rough baize. The water containing the sediment is conveyed down these, and the gold precipitating in the course is entangled in the rough surface. Every half hour the hides are carried to a neighbouring tank, stretched over it, dipped, and beaten repeatedly. The gold is found at the bottom of these reservoirs mingled with *esmeril*, from which it is separated by the aid of mercury. The whole business is carried on in a most cumbrous, inartificial, and wasteful manner. The gold thus procured is brought to the nearest mint, where the crown's fifths are deducted, and the rest refined and melted. The deliverer may either have his gold in the form of an ingot with the public stamp, or he may have a receipt for it, which entitles him to receive the amount from any mint in Brazil. This business gives employment to the great bulk of the population in Minas Geraes, in Matto Grosso, and in Goyaz. The amount of metal obtained we have no means of ascertaining with any degree of exactness. Minas alone, it has been calculated, yields, in the form of royal fifths, no less than 150 arrobas. The annual produce of Matto Grosso has been estimated at twenty arrobas. When the fifths were first imposed (in 1753) in Goyaz, they yielded annually a sum of £67,155; but since that period the quantity of gold obtained has been gradually diminishing.

Iron founderies.

The iron of Brazil has hitherto been almost entirely neglected, although no country is richer in this invaluable metal. In 1817-20 there were, as far as we have been able to learn, only the following iron-works in the empire: 1. That of Ypanema, in the province of S. Paulo. The immense deposit of magnetic iron ore in this neighbourhood was long worked in an unsatisfactory manner. In 1810 a company of Swedish miners and founders settled there, and erected two small refining furnaces. In 1807 they produced yearly 4000 arrobas of iron, which was manufactured on the spot into horses' shoes, nails, locks, and other articles. A larger establishment, with two smelting and several refining furnaces, and bellows moved by water, had been built at that time, but was waiting for workmen from Germany. Nothing more has been learned of its fate. 2. To the north-west of Antonio Pereira, near the centre of Minas, Eschwege erected a small iron foundery in 1816, and intrusted the

management of it to a German overseer. The daily produce was in 1818 two arrobas. It was worked up on the spot into hatchets, knives, bill-hooks, horse-shoes, and nails. 3. At Gaspar Soares, in the same province, a foundery on a large scale was erected in 1812 at the king's expense. It consisted of one smelting and two refining furnaces. The first mentioned had never been used, and the other two were lying idle when visited by Spix and Martius. The ore is excellent, and a canal might be dug at comparatively little expense, to the navigable portion of the Rio Doce. There were several furnaces in the province belonging to private individuals, and a considerable quantity of iron was brought from Rio, but still the supply was deficient.

The most important salt country in Brazil commences at the Rio de Salitre, a tributary of the Rio de S. Francisco, about six leagues from Joazeiro. At this place an artificial hollow extends along the river for the space of 60,000 square feet, and a fine, soft, ochre-coloured earth forms the bottom of the trough. The annual floods melt the saline particles contained in this mould; and when the river falls, a salt pool is left. The heat of the sun then evaporates the water, and the surface is left covered with hollow quadrangular pyramids of the salt. The soil is of a similar conformation along the bed of the S. Francisco for an extent of nearly two degrees of longitude, and everywhere nearly thirty leagues in breadth. Hollows, such as we have described, natural or artificial, are scattered over the whole extent. These are the salt-mines of the country. The greater number belong to the wealthy landholders on the Rio de S. Francisco; but many, especially on the western side, are yet unappropriated, and may be worked by any one. At certain seasons this district is visited by immense multitudes, some coming from very great distances. The earth is dug up to the depth of an inch, and deposited in wooden troughs; then water is poured upon it, which absorbs the salt. The earth is allowed to subside, upon which the water impregnated with salt is drawn off into another trough, and left to crystallize in the heat of the sun. The salt is packed in four-cornered bags of cow-hide, each containing from thirty to forty lbs. A plate of salt is valued at from twenty to forty rees; a sack at from 300 to 400. The annual produce of the salines exceeds 35,000 sacks. Salines nearly as productive are found at the sources of the Paraguay, in Matto Grosso; and considerable quantities of salt are manufactured on the shores of the northern provinces. Between the salt district and the hills saltpetre occurs in great quantities. Fifteen leagues above the Rio de Salitre, large caves are found in the limestone-rock, filled with black earth, which sometimes contains three fourths of its weight in saltpetre. This is washed out, and the water heated to a certain degree, in order that it may deposit the culinary salt; the saltpetre is then left to crystallize. A similar process is followed at Formigas, near the source of the S. Francisco.

Ship-building is diligently pursued at more than one station along the coast. The port of S. Francisco is the most southerly point at which the construction of vessels is carried on to any extent. Vessels of large size, and a number of small craft for coasters, are built here. The demand for ship-carpenters is always brisk. To the north of Bahia, on account of the reef, the ships built are generally of a small tonnage. Laranjeiras, Itapicuru, and Villa do Conde, build vessels capable of holding from 4000 to 8000 arrobas of lading. Pernambuco fits out a great number of small craft. The royal docks at Bahia are small, and few ships of war are built there; but such as are have the character of surpassing even the East Indian vessels in durability. Merchant ships are for the most part built at Tapagipe, about a league and a half to the north-east of the city. We have

Statistics. no trust-worthy account of the probable amount of capital invested in ship-building.

Whale-fishery. The whale-fishing is here in its appropriate place. The stations of this fishery are S. Catliarina, Itaparica, and Bahia. It is only pursued in small boats near the shore. The pans in which the blubber is boiled are small, and heated by common stoves. The receivers are extremely apt to collect dust and dirt of all kinds. Throughout Brazil, not above 100 fish, great and small, are taken in the course of a year. Each yields, on an average, from fourteen to eighteen pipas (150 gallons English each) of train oil; and the value of this oil, together with the whalebone, may amount to L.150. On the islands of the Solimoes (Upper Amazons) a considerable quantity of oil is yearly collected from the eggs of the turtle, which are dug up, broken in the boats, and left till the light oil separates and swims on the top. It is boiled and separated from the impurities, when it assumes the colour and consistence of lard. This product is deposited in earthen pots containing fifty or sixty pounds each. Of these more than 8000 are yearly prepared on the Amazons. The Madeira yields 1000. The drying and salting of fish is carried on to a considerable extent along the sea-coast, on the Amazons, and upon a large lake near the salines on the Rio de Francisco. A coarse kind of woollen cloth for home consumption is manufactured at S. Paulo. Hats are made at S. João d'el Rey. There is an establishment for the manufacture of arms in the town of S. Paulo; a powder-mill in the neighbourhood of Rio, and one of less importance in Minas. A coarse cotton cloth is woven in Goyaz, Maranhão, and Sergippe d'el Rey, used to clothe the slaves, or form bags for packing cotton. In S. Paulo, Goyaz, and Para, tanning is carried on to a small extent.

Commerce. Nothing serves better to convey a just notion of the state of trade in a nation than a knowledge of the state of its circulating medium, and the means of communication between one place and another. The sums of gold, annually paid into the Brazilian treasury under the designation of fifths, might afford ample materials for a metallic currency. The great quantities of bullion, however, annually shipped for Europe, for the East Indian and China trade, have counteracted the tendency of this arrangement. The amount of metallic currency even in Rio it has been found impossible to ascertain with any degree of accuracy, the drains occurring at such irregular intervals. Interest has been known to rise at once from twelve per cent., the average rate, to twenty or even twenty-two per cent. In Minas, the proprietors of the mines are in the habit of allowing their gold to remain at the mint, and take a receipt in exchange, which circulates freely through the whole of Brazil. The metallic currency in Minas Novas in 1818 did not amount to 80,000. At the salines on the Rio Francisco salt is used as a medium of exchange. In the interior the primitive mode of barter is still of frequent occurrence. Previous to 1808 a bank issuing notes was established in Rio by a company of the wealthiest merchants and capitalists. As the institution grew in wealth, it ventured to establish an insurance company, and to farm several of the regalia. Officers of state in the different provinces now began to deposit a part of their salaries in the bank, and rich landed proprietors their monied capital. In 1808 the bank was erected by royal charter into the bank of Brazil. Since that time it has taken the active share in financial arrangements, to which we have already alluded. The sums of money abstracted by the king when he quitted the country in 1821, and several underhand transactions, are believed to have materially shattered the funds of the bank; its notes nevertheless retain their credit, and circulate in every province of Brazil.

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Statistics. The intercourse between place and place in Brazil is effected in three different manners; along the coast by small coasting craft, drawing about ten feet of water; on the rivers by boats manned on an average with twelve rowers and a steersman, besides the supercargo; towards the embouchures of the rivers larger vessels are in use; on the dry land, along roads, or rather tracks, by means of troops of mules, for, except in Rio and the immediate vicinity, there are no wheel-carriages in Brazil. From Minas Novas to Rio Janeiro there are twelve troops, each of forty mules, with their negro attendants and guiding arriero, continually on the road, engaged in carrying cotton, and bringing back European produce in exchange. From S. João d'el Rey there are four such troops annually; and from other places the number is in proportion to the frequency of their intercourse. Merchants who do not choose to wait the appointed period, and travellers of all kinds who carry baggage along with them, must form a troop more or less numerous, according to their wants. The difficulty thus thrown in the way of the transport of many articles of commerce may easily be conceived. Even river carriage, on account of the numerous falls on most of the streams, is scarcely more convenient.

Brazil being as yet a young country, dependent for most necessities of manufacturing produce, and for all the luxuries of civilized life, upon other countries, the tendency of its internal trade is in a great measure determined by its foreign commerce. The ports, which, from favourable situation, convenience, and the quantity of capital accumulated in their neighbourhood, monopolize in a great measure the external trade of Brazil, are Rio Janeiro, Bahia, Recife the capital of Pernambuco, Maranhão, and Para.

Rio Janeiro, in addition to its own produce, draws its articles of consumpt and export from the southern provinces of Rio Grande, S. Catharina, and S. Paulo, from Minas Geraes, and from Porto Seguro. The raw produce of the former, wheat, hides (an annual average of 300,000), unrefined tallow, horns, horse-hair, and *charque* or jerked beef, are imported coastwise, giving employment to a hundred sail of coasters, which make the voyage thrice in the year, and carry in return rum, sugar, tobacco, cotton, and European goods of all descriptions, particularly English. The produce of S. Catharina, exclusively agricultural, has been enumerated above. Two thirds of the whole are exported, chiefly to Rio Janeiro. This trade gave employment in 1812 to 152 vessels, three-masters, brigs, smacks, &c. In 1813 the value of the goods exported from the province of S. Paulo was L.166,735. Of these, to the value of upwards of L.134,000 found their way by land-carriage to Rio Janeiro. The returns from that city in wine, beer, iron and hardware, glass and stoneware, tea, &c. were valued at L.161,670. The cotton trade from Minas Novas to Rio Janeiro gives constant employment to twelve troops of mules, each mule carrying eight arrobas, valued at L.1. 15s. the arroba. Great numbers of precious stones are exported from Minas Novas to Rio. The greater part of the gold melted in Minas Geraes finds its way to Rio: the exact sum cannot be ascertained, but merchants trading to the East Indies have been known to export bullion to the value of L.800,000 in one year. S. João d'el Rey (still within Minas Geraes) supplies Rio with mules, cattle, poultry, gold, lard, cheese, hats, and some cotton cloth, and receives in return woollen and cotton cloths from England and Portugal, hardware, wine, porter, &c. From Porto Seguro, Rio draws tobacco and fish, but to what amount we have no means of ascertaining. The following table shows the amount and value of the most important articles exported from Rio Janeiro in 1817.

Statistics.

Articles.	Quantity.	Value.
Sugar.....	680,000 arroba.	L.340,000
Coffee.....	298,999 arroba.	171,900
Cotton.....	520,000 arroba.	640,000
Hides.....	112,000	153,500
Tobacco.....	30,000 quint.	45,000

Besides these weightier articles, Rio de Janeiro exports considerable quantities of horns, horse-hair, and hides, train-oil, ipecacuanha, and dye-woods. The value of these minor articles may amount, one year with another, to L.400,000. The returns from Portugal and her colonies are made in wine, oil, vinegar, dried fish, hams, olives, brandy, leather, drugs, cloths, books, musical instruments, paper, gun-powder, earthenware, ropes, canvass, tar, pitch, steel, and shoes. Those from London, Liverpool, and the British colonies, consist of cotton and fine woollen cloths, porcelain and earthenware, iron, lead, copper, tin, anchors, cables, gun-powder, porter, cheese, salt-butter, and spirituous liquors. East India goods are imported direct or from Gibraltar. France sends articles of elegance and luxury, furniture, silks, books, liqueurs, paintings, mirrors, hats, oil, &c. Holland sends beer, glass, linen, and holland; North America grain, soap, spermaceti candles, biscuit, tar, leather, deals, potash, and coarse furniture. The northern nations of Europe send their staple wares. From Africa are imported gold dust, ivory, pepper, ebony, and slaves, the latter at an yearly average of upwards of 20,000. We have been unable to obtain exact lists of these returns; but their variety, and the value of the exports, indicate sufficiently the state of the foreign trade of Rio.

Bahia, as a depôt of home productions for the foreign trade, is perhaps of yet greater importance than Rio Janeiro. Three great roads lead to the interior; that over Conquista and Rio Pardo to Minas Geracs, that across the Rio de Contas to Matto Grosso and Goyaz, and that through Joazeiro to the interior of Pernambuco and Piahy. By the first come the cattle from Rio Grande do Sul; raw produce and live stock from S. Paulo to the value of L.6090; live stock, saltpetre, a small sum of gold, and cotton equal in quantity to that carried to Rio de Janeiro, from Minas Geraes. By the second come gold and precious stones from Goyaz and Matto Grosso, but to what amount we are unable to say. The latter province sends in addition deals, hides raw and tanned, brandy, mandioca, lard, and live stock, to the value of L.9000 per annum. From Pernambuco and Piahy the imports consist of cotton and cattle. The animal food consumed in Bahia, or exported, is collected from the interior of Brazil, in a circuit extending from Rio Grande do Sul to Piahy. Cotton is imported from a narrower range, including Minas, Pernambuco, and Piahy. The returns are made in negroes, wine, and foreign merchandise. The products of the coast are brought in boats to Bahia from a distance of thirty leagues on either side. The foreign trade is in some measure worthy the centre of such an immense district. In 1817, 2000 trading vessels visited Bahia, deducting coasters. The following table shows the principal exports in 1817, and their value.

Articles.	Quantity.	Value.
Sugar.....	1,200,000 arr.	L.600,000
Cotton.....	160,460 arr.	392,920
Tobacco, first quality.....	240,000 arr.	90,000
second.....	340,000 arr.	59,500
third.....	80,000 arr.	28,000
Hides.....	30,000	8,000
Coffee.....	10,000 arr.	13,750

The returns are essentially the same as at Rio. The proportion of European, North American, and African articles is greater; that of East Indian less. On an average, 12,000 negro slaves are annually imported into Bahia.

Recife has been styled by some the most important trading place in Brazil after Rio and Bahia; unfortunately our information respecting its trade is too meagre to enable us to judge. Of its home trade, we merely know that it is furnished with salt from the salines of Rio de Salitre, and that from its port is exported the cotton of Paraiba, Rio Grande de Norte, and Seara, in addition to that of Pernambuco. The average number of ships employed in the trade to North America and Europe is 150. The exports consist of cotton, sugar, molasses, rum, hides of goats and oxen, tobacco, cocoa-nuts, ipecacuanha, dye-woods, and Brazil-wood. The amount of cotton annually exported is 80,000 bags. The sugar of Pernambuco is nearly equal in quality to that of Bahia.

Respecting the intercourse between this city and the interior, or the less important towns on the coast, we have no means of judging. It appears that a brisk intercourse is kept up by means of small-craft (*Sumacas e Lanchas de Cabotagem*) with the harbours Vianna, Guimaraes, Turyassu, and Tutaia, within the province. Cotton is the staple of Maranhão; and Cachias, in the interior, is the centre of the cotton cultivation. The medium annual value of the exports from Maranhão between 1815 and 1820 amounted to L.770,151; of imports to L.710,295. In 1821 the value of the total exports amounted only to L.321,171. The most important articles were cotton to the value of L.239,654, and rice to the value of L.54,191. The whole was exported to Lisbon, Porto, Vianna, Figueiras, Liverpool, Havre de Grace, Rouen, and the United States of North America. Liverpool's share of the cotton alone is valued at L.150,165. The imports for the same year are valued at L.333,153. The principal article is flour, 54,793 arrobas from North America, 17,048 from Liverpool, and 9318 from different ports in Brazil. In the course of the year 200 foreign vessels entered the port, and 192 cleared out; 161 Brazilian vessels entered, and 157 cleared out. These numbers are exclusive of the small coasting vessels sailing from harbours within the province.

Para boasts of a greater variety of articles of export than any other city of Brazil, and with justice, for it reckons no less than forty. These are, in addition to what is called colonial produce, balsam of capaiva, sarsaparilla, Indian rubber, a variety of spices, and timber of different kinds. Of late horses have been added to the list, which are exported to the English colonies. The above articles, however, are the collective wealth of the Spanish provinces on the Upper Amazons, of the Rio Negro, and of the provinces of Goyaz and Matto Grosso. Para being the only harbour possessed by the country which is watered by the Amazons and its tributaries, it receives its superfluities, and sends the conveniences of Europe in return. In 1819 the value of the goods exported to Portugal was L.113,179, of those imported in return L.74,776. In the same year goods were exported to England to the value of L.73,871, and imported thence to the amount of L.76,660.

Brazilian Weights: 1 arroba = 32½ lbs. English; 1 quintal = 129½ lbs. English.—*Measures, Dry:* 1 alqueire = ½ bush. English; 1 maio = 17½ bush. English. *Liquid:* 1 canada = 2 galls. English; 1 pipa = 120 galls. English. *Longitudinal:* 5 varas = 6 yds. English; 27 covadas = 20 yds. English.

Southey's *History of Brazil*, 3 vols. 4to; *Travels of Spix and Martius in Brazil*, 3 vols. 4to; Mawe's *Travels in Brazil*, 1 vol. 8vo; Henderson's *History of Brazil*, 1 vol. 4to; *Memoirs of General Miller*, 2 vols. 8vo; Malte-Brun, article *Brazil*; *Rheinisches Museum*, 1828.

BRAZING, the soldering or joining two pieces of iron together by means of thin plates of brass, melted between the pieces that are to be joined. If the work be very fine, as when two leaves of a broken saw are to be brazed together, it is covered with pulverized borax, melted with water, that it may incorporate with the brass powder, which is added to it; then the piece is exposed to the fire without touching the coals, and heated till the brass is seen to run.

BRAZING is also the joining of two pieces of iron together by beating them hot, the one upon the other.

BRAZLAU, a town, the capital of the circle of the same name, in the Russian government of Podolia. It stands on the river Bug, in a very fertile district, and contains about 1200 inhabitants. Long. 28. 51. E. Lat. 48. 52. N.

BREACH, in a general sense, denotes a break or rupture in some part of a fence or inclosure, whether owing to time or violence. Inundations or overflows of lands are frequently owing to breaches in dikes or sea banks. Dagenham breach is famous; it was made in 1707, by a failure of the Thames wall in a very high tide. The force with which it burst in upon the neighbouring level tore up a large channel or passage for water a hundred yards wide, and in some places twenty feet deep, by which a multitude of subterraneous trees that had been buried many ages before were laid bare.

BREACH, in *Fortification*, is a gap or opening made in any part of the works of a fortress by the cannon or mines of the besiegers, with a view to an assault upon the place. To render the attack more difficult, the besieged sow the breach with crow-feet, stop it up with *chevaux de frise*, or retrench it by cutting traverses within. A practicable breach is that where men may mount and effect a lodgment, and it ought to be fifteen or twenty fathoms wide. The besiegers sometimes make their way to it by covering themselves with gabions, earth-bags, and the like; but in our army the practice has always been for storming parties to advance to the breach without any cover or protection, and to trust for success to their own daring and perseverance.

BREAD, a mass of dough kneaded and baked in an oven. See **BAKING**.

BREAD, ASSIZE OF. See **BAKING**.

BREAD-FRUIT. Among the more valuable products of the warmer climates and the fertile islands of the Southern Pacific Ocean, is to be ranked the bread-fruit, or *Artocarpus incisa* of botanists. Nature has favoured the tropical regions, and those countries in their vicinity, with inexhaustible quantities of the choicest vegetables, while the inhabitants of the north are restricted to shrivelled berries and meagre roots; and if they have obtained a supply, always precarious, of some of the finer fruits, it is the result of patience, skill, and industry.

Ever since Europeans frequented the eastern world in commercial enterprise, it is probable that they were acquainted with the bread-fruit. How, indeed, could its properties be unknown to Quiros, who visited Otaheite so long ago as the year 1606? Yet the English navigator Dampier seems to have been the first European whose notice was particularly directed towards it, during his circumnavigation in the year 1688; and he expresses himself in these words: "The bread-fruit, as we call it, grows on a large tree, as big and high as our largest apple trees. It hath a spreading head, full of branches and dark leaves. The fruit grows on the boughs like apples; it is as big as a penny-loaf when the wheat is at five shillings the bushel. It is of a round shape, and hath a thick tough rind. When the fruit is ripe it is yellow and soft, and the taste is sweet and pleasant. The natives of Guam use it for

bread. They gather it, when full grown, while it is green and hard; then they bake it in an oven, which scorseth the rind, and makes it black; but they scrape off the outside black crust, and there remains a tender thin crust; and the inside is soft, tender, and white, like the crumbs of a penny loaf. There is neither seed nor stone in the inside, but all of a firm substance like bread. It must be eaten new, for if it be kept above twenty-four hours it becomes dry and eats harsh and choky; but it is very pleasant before it is too stale. This fruit lasts in season eight months in the year, during which time the natives eat no other sort of food of bread kind. I did never see of this fruit any where but here (Guam). The natives told us that there is plenty of this fruit growing on the rest of the Ladrone Islands, and I did never hear of it anywhere else." The bread-fruit, however, is found in still greater profusion, and in equal perfection, on many of the groups of islands scattered throughout the Southern Pacific Ocean; nor is it confined to them exclusively, but their soil and climate seem to correspond more intimately with the conditions of its vegetation.

There are two leading species of this plant, which are Different characterized by the presence or absence of seeds; the species.

latter being the preferable kind, and that which is cultivated more carefully for its produce. The natives of the South Sea Islands maintain, however, that eight different species, or rather varieties, may be distinguished, and for which they have the respective names of Patteah, Eroroo, Awanna, Mi-re, Oree, Powerro, Appeere, Rowdeah. The leaf of the first, fourth, and eighth, differs from that of the rest; the fourth being more sinuated, and the eighth having a large broad leaf, not at all sinuated. In the first, also, the fruit is rather larger, and of a more oblong form, while in the last it is round, and not above half the size of the others. European observers, however, do not seem in general disposed to recognise these as essential distinctions, although they admit other varieties.

As Dampier observes, the bread-fruit is a large tree, growing to the height of forty feet or more. It is thick in the stem, and has a luxuriant foliage. The trunk is upright, the wood soft, smooth, and yellowish; and wherever the tree is wounded, a glutinous fluid exudes. The branches form an ample head, almost globular; the leaves are eighteen inches long and eleven broad, resembling those of the oak or the fig tree, from their deep sinuosities. The younger leaves, like all the more tender plants of the tree, are glutinous to the touch. The male flowers are among the upper leaves, and the female flowers at the ends of the twigs. But it is the fruit which constitutes the value of the plant, and this is a very large berry, according to botanists, with a reticulated surface, resembling a cocoa-nut or melon in size and form, nine inches in length. It is filled with a white farinaceous fibrous pulp, which becomes juicy and yellow when the fruit is ripe; and the edible portion lies between the skin, which is green, and a core in the centre, which is about an inch in diameter.

During a considerable portion of the year the bread-fruit affords the chief sustenance of the Society Islanders. It is prepared after different fashions, and its taste depends in a great measure on the mode of preparation. It is insipid, slightly sweet, somewhat resembling wheaten bread mixed with Jerusalem artichokes, and it has been compared to a cake made of flour, egg, sugar, milk, and butter. In general it is cut in several pieces, and roasted or baked in a hole made in the ground, which is paved round with large smooth stones; and then it resembles a boiled potato, not being so farinaceous as a good one, but more so than one of ordinary quality. The stones are previously heated by a fire kindled in the excavation,

Bread-fruit.

Used as food to a great extent.

Bread-fruit.

and the bread-fruit, being wrapped in a banana leaf, is laid upon them, and covered with leaves and hot stones. In Otaheite, and in the West Indian Islands, several dishes are made of it, either by thus baking it in an oven entire, when it is considered to equal or surpass any kind of bread, by adding water or the milk of the cocoa nut, by boiling it, or forming it into a paste. This last is accomplished by taking the fruit before it attains complete maturity, and laying it in heaps, closely covered up with leaves, when it undergoes fermentation, and becomes disagreeably sweet. The core being then drawn out, the fruit or pulp is thrown into a paved excavation, and the whole covered up with leaves, whereon heavy stones are laid: it thus undergoes a second fermentation, and becomes sour, after which it will suffer no change for a long time. A leaven may thus be formed of it, which is baked as occasion requires. In the island of Nukahiwa, an agreeable beverage can be obtained from it; and in the West Indies it can be baked like biscuit, and will keep nearly as long. The fruit is in the greatest perfection about a week before beginning to ripen, which is easily recognised by the skin changing to a brownish cast, and by small granulations formed of the juice. In the West Indies it is soft and yellow when ripe, and is in taste and smell like a very ripe melon. Hogs, dogs, and poultry then feed on it readily.

Besides this, the bread-fruit tree proper, there is one that has been long known in India and the eastern islands, of which the fruit contains from forty to a hundred farinaceous seeds, in appearance resembling chestnuts. These when roasted or boiled are more grateful to many persons than the bread-fruit, and the negroes are very fond of them. The external characters of the tree are scarcely to be distinguished from those of the other, and the chief distinction lies in the fruit, which attains nearly the size of that we have described, and is covered with prickles like a hedgehog. It grows from the seed with rapid vegetation, and attains larger dimensions than the proper bread-fruit tree.

Its other uses.

The natives of those islands producing this useful vegetable collect it with very little trouble; they have only to climb the tree and gather the fruit. Nor is nutriment the sole purpose to which it is converted; for they have a method of fabricating cloth from the bark, the leaves are substituted for towels, and the wood is employed in the construction of their boats and houses. A kind of cement and birdlime is also prepared by boiling the juice exuding from the bark in cocoa-nut oil.

Its cultivation.

It appears that there are other vegetables of this class, producing fruit of inferior quality, but on that account receiving less attention. The bread-fruit proper is of easy cultivation in its native soil. In some of the islands it seems an indigenous product, and springs from the root of old trees without any care; in others, it requires simply to be put into the earth. The trees flourish with the greatest luxuriance on rising grounds; and it has been remarked, that where the hills of the Sandwich Islands rise almost perpendicularly in a great variety of peaks, their steep declivities, and the deep valleys intervening, are covered with trees, among which the bread-fruit is particularly abundant. It has also been observed, that although we are accustomed to consider Otaheite as of the greatest fertility in this plant, the trees of the Sandwich Islands produce double the quantity of fruit. Though nearly of the same height, the branches begin to shoot out much lower from the trunk, and with greater luxuriance. In Otaheite, they are propagated by suckers from the root, which are best transplanted in wet weather, when the earth forms balls around them; then they are not liable to suffer from removal. This valuable plant is widely diffused in the southern and eastern isles, and it is generally

found throughout the Great Pacific Ocean. It grows on Amboyna, the Banda Islands, Timor, and the Ladrões; but it is more especially the object of care and cultivation in the Marquesas, and the Friendly and Society Islands, where it vegetates in uncommon luxuriance and profusion.

The great utility of the bread-fruit as an article of subsistence for mankind has, at different times, led to speculations on the possibility of naturalizing it in places where it is not of spontaneous growth. M. de Poivre, the philosophical governor of the Mauritius, succeeded in introducing it there, and in the Isle of Bourbon, whither it was conveyed by M. de Sonnerat, from Luçon, in the Philippine Islands. Being found in the greatest luxuriance under the same latitudes as the British West India Islands, and in a climate not dissimilar, government deemed the transmission of it thither, both as practicable without much difficulty, and as promising a future store of subsistence for the inhabitants. An expedition was therefore fitted out with particular care, under the command of Captain, then Lieutenant Bligh, who sailed in the *Bounty* store-ship for the South Seas in December 1787. This vessel was prepared so as to receive a great many bread-fruit and other plants, which would have proved a valuable acquisition to the colonists of the West Indies, and some of which were expected to succeed under the culture of the curious in Great Britain. The *Bounty* arrived in safety at Otaheite, the principal place of her destination, and took on board 1015 bread-fruit plants, besides a great variety of different species of other plants, and after remaining twenty-three weeks, which were busily occupied, set sail on the 4th of April 1789. But it is unnecessary to say more of the expedition, except that it was rendered totally abortive by a mutiny which ensued three weeks subsequently to its departure. The captain and eighteen adherents were barbarously turned adrift in an open boat, wherein they suffered incredible hardships, and, after a navigation of 3600 miles, reached the island of Timor, having lost only one of their number, who was murdered by the savages of an intermediate island. Notwithstanding the unfortunate result of this voyage, the object was still kept in view, and a new expedition planned with still greater precaution than the former; and it has been said that his late majesty, King George III. took a lively interest in conferring so important a benefit on a distant portion of his people. Captain Bligh having arrived in England, was appointed to the command of the *Providence* and *Assistance*, two vessels specially fitted out as before; and part of their complement consisted of two gardeners, to take the management of the plants collected. The vessels sailed in August 1791, reached Van Diemen's Land in February 1792, and anchored at Otaheite in February following. Here they remained above three months, and obtained even a greater store of plants than formerly; for there were now 1281 pots and tubs, whereas the first number of the bread-fruit trees, in 1789, did not exceed 887. Captain Bligh, in returning, made a dangerous voyage through Endeavour Straits, the exploring of which was part of his former instructions, and anchored at Coupang in the island of Timor, where he substituted many other plants for those that had died. He then sailed for the West Indies, and touching at St Helena, landed some bread-fruit plants, and took on board those of different species. The object of his voyage was at length completed by reaching the island of St Vincent's in January 1793, where he committed 544 plants, of which 333 were bread-fruit, to the care of Dr Anderson, superintendent of the botanical garden, and substituted for them 467 of different species, designed for his majesty's garden at Kew. In the next place, Captain Bligh landed 623 plants, of which 347 were bread-fruit, at Port Royal in the island of Ja-

Bread-fruit.

maica, and replaced them with a further collection for the king, with which he arrived in England on the 2d of August 1793. Five years and eight months had thus been occupied in accomplishing the desirable purpose of these two expeditions. But it belonged especially to Britain, by whom a familiar intercourse with the southern islanders was first opened up, to effect an object of so much importance.

Nevertheless, some have been found inclined to challenge the wisdom of so difficult and expensive an experiment; both because the expectations of those who looked for an inexhaustible source of subsistence were not speedily realized, and because the places best adapted for its culture already possess another vegetable, the plantain, which is much more grateful to the negroes, for whom the bread-fruit was principally designed. It has been argued that the bread-fruit tree requires considerable care in cultivation, that its progress to maturity is slow, though in Britain it would appear extremely rapid. Three years are required to reap the fruit; the plantain demands no care, while it produces its crop in fifteen months; thus giving it a decided preference in the opinion of the colonist, who is always impatient for a return. Further, it has been said, that wherever any vegetable, already relished by the inhabitants of a district, is completely established, they will always reject what they think less agreeable. These arguments have certainly had considerable weight; probably, however, from not duly appreciating the difficulties attendant on such an experiment as the naturalization of plants. But were we to take a retrospect of all the obstacles which have opposed the cultivation of many species of grain and fruits, at present not uncommon in Britain, it would be very evident that success has resulted only from the most patient and laborious attention. Positive conclusions on this subject are perhaps as yet premature.

In the year 1777 a premium was offered by the Society for the Encouragement of Arts and Manufactures, to any individuals who should bring the bread-fruit plant from the South Sea Islands in a state of vegetation to the West Indies, and the gold medal was awarded, in 1793, to Captain Bligh accordingly. That society, with the laudable design of promoting its culture, continued to offer further premiums for the greatest number of plants raised in the British settlements; and in consequence a silver medal was awarded to Dr Anderson, superintendent of the botanical garden at St Vincents in 1798; and, in 1802, the gold medal to the Honourable Joseph Robley, governor of the island of Tobago. From the course adopted by these two cultivators, the history of the bread-fruit has received much elucidation, and we shall comprise it in a few observations.

Mr Robley received three plants from Dr Anderson in June 1793, which he planted in very deep rich soil, and paid them every attention in hopes of procuring shoots. They flourished exceedingly, produced fruit in 1795, and continued to do so until autumn 1801, after which we have no notices respecting them. Being disappointed of obtaining suckers, Mr Robley applied to Dr Anderson, who advised him to lay bare some of the uppermost roots, and to wound them very deeply; and having followed these directions in October 1800, they almost immediately began to put forth shoots in abundance. In December, 120 fine plants were thus obtained, which Mr Robley placed in baskets containing about a gallon of good rich loose soil, and deposited in the shade in the vicinity of water. With this element also they were refreshed when the weather required it. Baskets were preferred to pots for the plants, from being lighter and more easily removed; likewise, because when deposited in the place

where they were ultimately to remain, the baskets would speedily rot, and not repress the growth of the plant, which would then extend its roots. European cultivators would do well to attend to the beneficial use of baskets; for it too often happens that a tender plant is wounded in removing it from a pot, or that the earth surrounding it is so deranged and displaced, that no subsequent care can preserve it from destruction. Encouraged by the successful issue of these previous experiments, Mr Robley prepared a point of land of loose sandy soil, bounded by a salt lagoon and the sea, for receiving a large plantation. When the tide filled, brackish water was to be found everywhere at the depth of two feet and a half from the surface; but it had been observed in some of the South Sea Islands, that bread-fruit trees grew in full vigour though brackish water bathed their roots, and the point was otherwise defended from the encroachments of the sea by an artificial bank. The land being ploughed and harrowed twice, was divided into beds stretching across from the sea to the lagoon; the beds were twenty-seven feet in breadth, and the plants put into the earth in the middle of each, and exactly at the distance of twenty-seven feet asunder; thus leaving a large space for their vegetation. Mr Robley's expectations were not disappointed. In August 1801 he had 153 plants in a flourishing condition; and, prosecuting the object still further, he had, in the course of the subsequent year, 371 on the point of land, of which no less than 319 plants were in a flourishing, and some of them in a productive state. He transmitted specimens of the fruit to England preserved in vinegar, as it will not keep above two days after being taken from the tree; as also of the dried leaves and blossom. Other correspondents, nearly about the same time, sent specimens of cakes made from the bread-fruit converted into flour, which were extremely well flavoured; and it seemed that a dry nutritious food, resembling tapioca in appearance and quality, might be prepared from it. The vegetation of this plant is very rapid. Ten of those committed to the care of Dr Anderson in 1793 were about two feet in height and half an inch in diameter; and he observed, that, in the year 1798, most of the trees in the botanical garden at St Vincents were above thirty feet in height, and the stem two feet above the ground was from three feet to three and a half in circumference. From the remarks he was enabled to make in this interval on the varieties of the tree in the botanical garden, it appeared that the fruit came out in succession during the greater part of the year, but less of it between November and March than at any other time. The number produced by a single tree was very great, being often in clusters of five and six, and bending the lower branches to the ground. According to the different varieties, the fruit was of various shapes and sizes, weighing from four to ten pounds, some smooth, others rough and tuberculated. When taken from the tree before maturity, the juice appeared of the consistence and colour of milk, and in taste somewhat similar. It issued for above ten minutes in an uninterrupted stream, and thickened into a glutinous and adhesive substance. Three months were required to bring the fruit to perfection, which, as above remarked, is about a week before it begins to ripen. Besides the Otahaitan bread-fruit, Captain Bligh left some of the East India bread-fruit in the botanical garden. But this proved of infinitely inferior quality, and a very indifferent substitute for it. It was ill-shaped, of a soft pulpy substance, and, like the other, wanting seeds, and propagating itself by suckers springing from the root.

A species of fruit bearing considerable analogy to those above described, is found on the Nicobar Islands, but we are unacquainted with the degree of attention it has re-

Bread-fruit.

Bread-fruit.

Bread-fruit.

Rest of these attempts.

Bread-
fruit.
Bread-
fruit of the
Nicobar
Islands.

ceived, either for the purpose of illustrating its natural history, or for economical uses. It is not less beneficial, however, to the natives. The tree producing this fruit vegetates promiscuously with others in the woods, but prefers a humid soil. Its trunk is straight, thirty or thirty-five feet in height, and from ten inches to two feet in circumference. The roots spring from it above the surface, and do not penetrate deep into the earth. The leaves are disposed like the large calyx of a flower; they are three feet long and four inches broad, of a dark green hue and tenacious substance. A long time elapses before the tree produces fruit, not less than about the period of human life. It then forms at the bottom of the leaves, from which it proceeds as it is enlarged, and, when nearly ripe, its colour changes from green to yellowish. This is the proper period for gathering it, when its weight is between thirty and forty pounds. The exterior surface is cut off, and the fruit is boiled in earthen pots covered with leaves, during several hours, on a slow fire; when, becoming soft and friable, the preparation is sufficient, and the fruit is then exposed to the air, and is next formed into a mass not unlike maize either in taste or colour. It may be preserved for a long time, but exposure to the atmosphere occasions acidity. The plant producing this fruit, however, is not of the same genus as those above described, although its fruit is converted to similar uses, but is rather a kind of palm, which it might be useful to naturalize in the eastern possessions of Britain. (N. N.)

BREAD, SACRAMENTAL, in the Protestant churches, is common leavened bread, in conformity to the ancient practice. In the Roman Catholic mass, azymous or unleavened bread is used, particularly in the Gallican church, where a sort is provided for this purpose, called *pain à chanter*, made of the purest wheaten flour pressed between two iron plates graven like wafer-moulds, and rubbed with white wax to prevent the paste from sticking. The Greeks observe divers ceremonies in making the eucharist bread. The Abyssinians have an apartment in their churches allotted for this service, being a kind of sacristy. Sirmond, in his disquisition on azymous bread, shows, from the council of Toledo, that anciently there were as many ceremonies used in the Latin church in the preparation of the unleavened bread as are still retained in the eastern churches.

Ecclesiastical writers enumerate other species of bread allotted for purposes of religion; as, *first*, *Kalendarius*, that anciently offered to the priest at the kalends; *secondly*, *Prebendarius*, the same with *capitularis*, that distributed daily to each prebendary or canon; *thirdly*, *Benedictus*, that usually given to catechumens before baptism, instead of the eucharist bread, which they were incapable of partaking of. The *panis benedictus* was called also *panagium* and *eulogium*, being a sort of bread blessed and consecrated by the priest, by which the catechumens were prepared for the reception of the body of Christ. The same was used afterwards, not only by catechumens, but by believers themselves, as a token of their mutual communion and friendship. Its origin is dated from the seventh century, at the council at Nantes. In the Gallican church we still find *panis benedictus*, *pain benit*, used for that offered for benediction, and afterwards distributed to pious persons who attend divine service in chapels. *Fourthly*, Consecrated bread is a piece of wax, paste, or even earth, over which several ceremonies have been performed with benedictions and other rites, to be sent in an *Agnus Dei* or relic-box, and presented for veneration. *Fifthly*, with regard to unleavened bread, *panis azymus*, the Jews eat no other during their passover; and exact search was made in every house to see that no leavened bread had been left. The usage was introduced in memory of their hasty de-

parture from Egypt, when they had not leisure to bake leavened bread. *Lastly*, shew-bread was that offered to God every Sabbath-day, being placed on the golden table in the holy of holies.

BREADALBANE, or BRAIDALBIN, a district of Scotland, in the western part of Perthshire, about thirty-three miles in length by thirty-one in breadth. It is mountainous, and for the most part unproductive. The hills, however, afford pasture for large flocks of sheep, and some of the valleys are cultivated, though not extensively, whilst others are nothing but mosses of peat and heath. At one extremity lies Loch Lyon, from which the river Lyon issues, and, flowing in a sinuous course, discharges itself into the Tay. In the centre of the district lies Loch Tay, which is about sixteen miles in length, and is surrounded by natural scenery of great beauty and splendour. The country abounds in limestone; and several metals, such as lead and copper, are also found. There is not a town in the district, and the only villages worthy of mention are Kenmore, Killin, and Clifton. It is now traversed by several good roads. In addition to the avocations of agriculture and the breeding of cattle, a part of the inhabitants during summer occupy themselves in collecting a species of lichen from among the rocks, which is used by dyers. The Earl of Breadalbane is the chief proprietor, whose seat is Taymouth, near Kenmore.

BREAK, in a general sense, signifies to divide a thing into several parts with violence. In the art of war, to *break ground* is to open the trenches before a place. Among sportsmen, to *break a horse* in trotting, is to make him light upon the hand in trotting, in order to make him fit for a gallop. To *break a horse* for hunting, is to supple him, to make him take the habit of running.

BREAKERS, a name given by sailors to those billows that break violently over rocks lying under the surface of the sea. They are distinguished both by their appearance and sound, as they cover that part of the sea with a perpetual foam, and produce a hoarse and terrible roaring, very different from the sound which the waves usually produce in a deeper bottom. When a ship is unhappily driven among breakers, it is hardly possible to save her.

BREAKWATER is any obstruction of wood, stone, or other material, as a boom or raft of wood, sunken vessels, &c., placed before the entrance of a port or harbour, or any projection from the land into the sea, as a pier, mole, or jetty, so placed as to break the force of the waves, and prevent their action on ships and vessels lying at anchor within them. Thus the piers of the ancient Piræus and of Rhodes; the moles of Naples, Genoa, and Castellamare; the piers of Ramsgate, Margate, Folkstone, Howth, and the wooden dike de Richelieu, thrown across the port of Rochelle, may all be denominated *Breakwaters*. In French it is sometimes called *Battre d'Eau*; a name which appears to have been applied to the mole at Tangier, a work commenced in 1763 under the direction of Lord Tiviot, Sir J. Lawson, and Sir Hugh Cholmley, and finished, or rather discontinued, in 1776, after having cost this nation the sum of L.243,897. 5s. 4½d. The term *Breakwater*, however, has of late years been considered as more peculiarly appropriate to large insulated dikes of stone, whether of regular masonry or sunk promiscuously in rough masses, so placed as to form an artificial island across the mouth of an open roadstead, and thereby, from obstructing and breaking the waves of the sea, to convert a dangerous anchorage into a safe and commodious harbour for the reception of ships of war or merchantmen.

Of this description of dike for creating an artificial harbour on a grand scale, fit for the reception of ships of war of the largest class, there are two remarkable examples in the breakwater of Cherbourg and that of Plymouth.

BREAKWATER OF CHERBOURG. In M. de Cessart's *Description des Travaux Hydrauliques*, will be found a very minute and laborious detail of all the preparatory operations, the progress, and the expense of constructing the breakwater of Cherbourg, up to the period of the Revolution. But the history of this great undertaking is summarily stated in a report made to the National Assembly in 1791, by M. de Curt, in the name of its Committee of Marine, concerning the marine establishment of Cherbourg.

It had always been a source of considerable annoyance to the French (and more particularly since the demolition of the works and basin of Dunkirk, which cost them more regret than the useless and expensive projects for that port ever could be worth), that while the whole line of their coast bordering on the English channel presented only sandy shores with shallow water, or an iron-bound coast bristled with rocks, nature had lavished on their "eternal rival" of the opposite coast, the incalculable advantages of a succession of deep and commodious harbours, or of safe and extensive roadsteads, inviting their possessors to commerce and navigation, and placing in their grasp "the sceptre and the sovereignty of the seas." M. Curt observes, that "the misfortunes of La Hogue, which all the talents of Tourville could not prevent, taught Louis XIV. that, in completing the defence of his frontiers by land, he had too much neglected his frontiers on the sea; that this great prince, however, profiting by experience, soon discovered that England owed the superiority of her marine to the military establishments which she possessed in the Channel." With a view of securing to France similar advantages, the Maréchal de Vauban was directed to visit the coasts of Normandy, for the purpose of adopting measures for placing in security against hostile attacks all such bays, harbours, and inlets, as were favourable for the disembarkation of troops; and to furnish plans of such works as he might judge to be necessary, not only for military, but for naval purposes. Among other projects, he reported that the roadstead of Cherbourg possessed the means of attack, of defence, and of protection; that it was very capable of exerting an influence on maritime war, and in their commercial relations with the northern powers; that it was the spot on which the head-quarters should be established on the coast of the Channel; and, in short, that it was a central advanced post with regard to England. He moreover reported, that it might be made a port for the safe retreat of a squadron crippled by stormy weather, or beaten by an enemy, or even for the reception of a victorious fleet with its prizes. By thus converting the present exposed roadstead of Cherbourg into a safe and protected anchorage for a fleet of men of war, France, he said, would be able to watch the motions of England, to oblige her at all times to keep a corresponding fleet in the Channel, and to menace her shores with invasion, of which she at all times stood so much in dread.

Opinions, however, being divided between the advantages of La Hogue and Cherbourg, Louis XVI., immediately after the conclusion of the American war, issued his directions to M. de Castries, secretary of state for the marine, to appoint a special commission to consider and report which of these two roadsteads combined the most advantages, and was in all respects preferable for constructing a port and naval arsenal capable of receiving and equipping from eighty to one hundred vessels of war of different descriptions. The commissioners had little hesitation in deciding upon Cherbourg, because, by means of a breakwater, it would be capable not only of admitting a fleet to ride securely at anchor when thus sheltered from the sea, but also of affording them protection against any

attempt of an enemy. It was added, that Cherbourg was an admirable place for watching Portsmouth; without appearing to have once recollected what an excellent anchorage Spithead was for watching Cherbourg.

Directions were accordingly given to M. de Caux, commanding officer of engineers at Cherbourg, to commence, as a preparatory measure, with the construction of a fort on the island of Peleé, and another on Du Homet, according to plans given in by Vauban in 1679. By these works the roadstead would be flanked on the right and left. The interval, however, being found too great to afford sufficient protection to all the ships that might require to be anchored in the roadstead, M. de Caux presented a plan to the minister at war for constructing an intermediate fort in the sea, which should be casemated, and sufficiently large to contain all the buildings necessary for a garrison. The surrounding walls were proposed to be sunk in caissons of 6000 feet square at the base, and fifty-two feet in height. The top of the platform was to be eighty feet above the bottom of the sea, and the area of its surface 1000 square toises. This plan, however, was not considered as calculated to afford sufficient shelter to a fleet from the winds and waves, and new projects were called for by the government.

In 1777 M. de la Bretonnière, capitaine de vaisseau, one of the commissioners who had been named to report on the comparative merits of the two roadsteads of Cherbourg and La Hogue, had addressed a memorial to the minister of marine, in which he expatiated at great length on the numerous advantages held out by the former, and particularly with regard to the security of the anchorage. He proposed to construct, at the distance of a league in the sea, a stone dike of 2000 toises in length, leaving three open passages into the roadstead it was intending to cover, one in the middle, and one at each extremity. This dike, like that which was sunk before Rochelle, was proposed to have as its nucleus a number of ships filled with masonry, floated off and sunk in proper situations, and afterwards to be cased with large sunken stones to the height of fifty feet above the bottom of the sea. The reason assigned for sinking the stone vessels was the supposition, that an under current might cause so much motion at the bottom of the sea as would derange the level, and work away the loose stones; so little appears at that time to have been known of the increasing tranquillity of the waves of the sea in proportion to the increasing depth of water.

On this plan the commissioners observed, 1. That in order to construct a dike of 2000 toises in length, with sloping sides proportioned to its height, there would be required so great a number of old ships as could hardly be collected in all France in less than ten years; and if purchased from foreigners, the expense would be enormous. 2. That the assembling and employing the necessary number of seamen would be next to impossible, but, if possible, highly impolitic, when, just at the close of a maritime war, commerce felt a pressing want of their services; whereas it might be practicable, and would be advantageous, to employ the military for some time before disbanding them. 3. That no comparison would hold good between the roadstead of Cherbourg, with an opening to the sea of 3600 toises, and a depth of forty to forty-two feet of water at the lowest ebb, and the closing up of the entrance of the port of Rochelle, which is only 740 toises in length, and the depth of water only five or six toises. 4. That the upper part of the projected dike, being exposed to the violent action of the sea, the stability of that part could not be depended on; and besides, a dike covered at high spring-tides with eighteen feet water would not fulfil the two indispensable conditions,—smooth water, and protection against an enemy. These arguments were deemed con-

Break-water.

Break-water.

clusive, and the plan of M. de la Bretonnière was abandoned.

In 1781 M. de Cessart, inspector-general of bridges and embankments, received directions to prepare a plan that should cover a fleet of from 80 to 100 ships of war in the roadstead of Cherbourg from the attack of an enemy, and protect them against the elements. M. de Cessart was fully aware, that to raise a barrier in front of this roadstead, and in the middle of the sea, capable of resisting the impetuosity of the waves, and repelling the enterprises of the enemy, was no easy task. "Nothing," says he, "that I had ever performed, or that I had ever read of in ancient or modern history, appeared to me to be worthy of being placed in comparison with the grandeur of this project." He suggested, as the preferable and only mode of answering the purpose of producing smooth water in the roadstead, that, instead of one continued dike or mole, a number of large masses, separated from each other, of a circular form, with an elevation greatly inclined, should be substituted; in short, a series of truncated cones, which, touching each other at their bases, might present to the sea at the surface alternate obstacles and openings, and thus interrupt and break down the waves previous to their entering the harbour. He also considered that, as these openings at the surface would not exceed seventy-two feet, a sufficient barrier would be formed against the passage of an enemy's vessel; and that, if necessary, in time of war it might be rendered still more secure by placing strong chains of iron across the intervals. It was proposed to construct these conical caissons of wood, the number of which, to cover a front of 2000 toises, would amount to ninety, which, at 360,000 livres for each cone, would cause a total expense of 32,400,000 for the whole. The number, however, was afterwards reduced to sixty-four, and the time estimated for completing the work thirteen years. Each cone was to be 150 feet in diameter at the base, and sixty feet in diameter at the top, and from sixty to seventy feet in height, the depth of water at spring tides in the line in which they were intended to be sunk varying from about fifty-six to seventy feet. They were proposed to be sunk without any bottoms in them, by which the upward resistance of the water, acting on a base whose surface was equal to 17,678 square feet, would be avoided. The caissons, floated off by casks attached to their inner and outer circumference, being towed to the spot where they were destined to be sunk, were then to be filled with stones to the tops, and left for a while to settle; after which the upper part, commencing with the line of low water, was to be built with masonry laid in pozzolana, and encased with stones of granite.

This plan of a stone dike or breakwater being laid in detail before the minister of marine, it was deemed proper, on a subject so entirely novel, and of such great national importance, to consult the ablest men in France before any steps should be taken for carrying it into execution. The details were accordingly submitted to the four commissioners, M. de Borda, a naval officer and member of the Academy of Sciences; M. de Fleurieu, capitaine de vaisseau, and director of ports and naval arsenals, afterwards minister of marine; M. Peronnet, member of the Academy of Sciences, chief engineer of bridges and embankments; and M. de Chezy, inspector and director of the school of engineers. They recommended that, in the first instance, an experimental cone should be constructed and floated off. Instead, however, of sixty feet in height, the cone made at Havre was only thirty-six feet; the circumference of its base 472 feet, and having a slope of sixty degrees; the upper circumference was 339 feet. Within the exterior cone, at the distance of five feet ten inches from it, was an interior and concentric cone, bound

together by beams of wood pointing to the common centre, each being the section of the radius. The frame of each cone was composed of eighty large upright beams, twenty-four feet long and one foot square. On these were erected eighty more, of fourteen feet in length, making in the whole 320 of these large uprights; the machine was then planked, hooped, and firmly fixed together with iron bolts.

The cone at Havre being completed, the next operation was to tow it off to the particular spot where it was to be sunk. Being open at the bottom, it was found necessary to attach to the lower circumference 284 large casks, part to the exterior and part to the interior cone; besides fifty casks, attached by lines of equal lengths, from the bottom of the inner circle, to float towards the centre, and thus assist in keeping it upright and steady. It was easy enough, by these means, to float off a vessel of this kind. M. de Cessart observes, that the force of 7200 pounds produced by a capstan, was found sufficient to draw it on the water to a distance equal to the length of its own diameter, or about twenty-five toises, in two minutes.

"The success of the experiment made at Havre," says M. Curt, "had inspired such veneration for the conical caissons, that those persons who had been most disposed to object to the plan were now obliged to be silent." The result of the experiment at once decided the government to commence operations at Cherbourg. M. de Cessart was appointed director of the works, with four engineers to assist him. A permanent council, consisting of commanders in chief, directors, engineers, &c. was ordered to reside for six summer months at Cherbourg, and the other six in Paris; and a considerable body of troops were marched down to the neighbourhood, to furnish a competent number of artificers and labourers, to be employed on this great national undertaking.

In 1783 the buildings were commenced for lodging the principal officers of the civil and military departments, and their respective establishments; a naval yard was marked out and inclosed; roads of communication were opened with the forts; and at Becquet, about a league to the eastward of Cherbourg, a small harbour was dug out for the reception of about eighty vessels, which were to be employed in transporting the stones from thence by sea.

On the 6th June 1784 the first cone was floated off and sunk, and the second on the 7th July following, in presence of 10,000 spectators, assembled on the shores and quays of Cherbourg; but before the cavity of the latter could be filled with stones, a storm, in the month of August, which continued five days, entirely demolished the upper part of this cone. In the course of this summer the quantity of stones sunk within the cavities of the two cones, outside their bases, and in the intermediate space, amounted to 4600 cubic toises, or about 65,000 tons.

In 1785 three more cones were completed and sunk at irregular intervals; and, at the end of that year, the quantity sunk amounted to 17,767 cubic toises, or about 250,000 tons. In 1786 five additional cones were completed and sunk, one of them in presence of the king; and the quantity of stones thrown within them, and deposited on the dike connecting the cones, amounted, at the end of this year, to 42,862 cubic toises, or 600,000 tons. In 1787 five more cones were sunk and filled with stones, making, in the whole, fifteen; and the distance between the first and fifteenth cone was 1203 toises, and the quantity of stones deposited within these cones and the connecting dike, at the end of this year, amounted to 71,585 cubic toises, or more than 1,000,000 tons. The violent gales of wind that are frequent in November and December carried away all the upper parts of the five

cones which were sunk this year. In 1788 three more were sunk, but the upper parts of the first two were carried away as the others had been; the height of the third was, therefore, reduced, so as to be, when sunk, on a level with low water; but this cone was upset and soon went to pieces.

The enormous expense, and the delay that had been occasioned, in completing and sinking these eighteen cones, exhausted the patience of the government, so that in the following year, 1789, it caused the three cones, then on the building slips, to be sold for whatever they would fetch.

The total quantity of stone that was sunk within the cones, and on the intermediate dike, from the year 1784 to the end of December 1790, being seven years, amounted to 373,359 cubic toises, or about 5,300,000 tons.

These eighteen cones being sunk at irregular distances from each other, some being 25 toises, and others 300 toises from centre to centre, occupied a line of 1950 toises in length. The distance of the first cone from the island Pelée, on the east, was 510, and of the eighteenth, to Fort Querqueville, on the west, 1200 toises; so that the whole entrance or opening of the roadstead of Cherbourg was originally 3660 toises, more than one-half of which was now imperfectly covered by the breakwater.

The expense of this great undertaking was not, we suspect, accurately known, and could not, probably, be ascertained. M. de Cessart estimates the eighteen cones alone at 6,231,407 livres, or about L.260,000; and the total expense incurred between the 1st of April 1783 and the 1st January 1791, he states as under:

	Livres.	
The value of the materials of the cones..	2,462,369	9 6
The value of the workmanship.....	1,560,560	9 9
The conveyance and sinking of stones..	14,880,074	2 5
Incidental expenses for buildings, magazines, &c.....	2,359,489	5 0
Contingent expenses	395,926	13 4

Making the general total.....21,658,420 0 0 or L.900,000 sterling. In this estimate the extra pay to the troops and seamen employed would not appear to be included; for M. de Curt, in his report to the national assembly, states the total expense to have amounted to 32,000,000 livres, or L.1,300,000 sterling; and that a farther sum would be required of 879,648 livres, to bring the top of the dike to an uniform height, namely, a little above the level of the surface at low water of ordinary tides.

The number of people employed was prodigious. To enable M. de Cessart to complete and sink five cones a year, he found it necessary to employ 250 carpenters, 30 blacksmiths, 200 stone-hewers, and 200 masons; in all 680 artificers. The number of quarrymen and others employed in transporting 174,720 cubic toises of stone for the 64 cones originally intended, or 13,650 yearly, was estimated at 400 workmen, 100 horses, 30 drivers, 24 chasses-marées, each carrying seven cubic toises, or about 98 tons, with 100 seamen; making an aggregate for this service of 526 men, and for the whole operation from 1200 to 1500 artificers and labourers, to which were actually superadded about 3000 soldiers.

A very considerable part of the expense might have been saved by dispensing altogether with the cones, all of which burst, as might have been expected, from the superincumbent weight of a deep column of water pressing the stones within against their sides. The ninth cone, which was sunk in 1786, went to pieces in 1800, after standing fourteen years; another reached the duration of five years; six remained on an average about four years; and all the rest went in pieces within a year from the time of their being sunk.

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The failure of the cones, and the breaking out of the Revolution, put an entire stop, for some time, to all operations at Cherbourg. The attention, however, of the national assembly was speedily called to what they considered to be an object of great national importance. In 1791 they directed their committee for the marine to make out a detailed report of the operations that had already been carried on. On this report being given in by M. de Curt, in the name of the committee, it was read and approved by the assembly, and funds to a certain extent decreed, to complete the undertaking on a new plan, proposed by M. de Cessart. The principal feature of this plan was that of casing over the surface of the dike as it then stood with large blocks of stone, and of carrying the height of the breakwater along the whole of its extent, so far above the high-water mark of spring tides as to render it capable of receiving batteries on the summit, at the middle, and at the two extremities.

The slope of the side next to the roadstead was found on examination to sustain itself unaltered at an angle of forty-five degrees, but the slope on the side next to the sea, whose base was three for one of height, had given way to the depth of fourteen feet below the low-water mark; and the materials being composed of small stones, were washed away, and had formed themselves into a prolonged slope of one foot only in height for ten feet of base, which was therefore concluded to be the natural slope made by the sea when acting upon a shingly shore; a conclusion, however, too vague to be correct, as the slope occasioned by the action of the sea must depend on the nature of the materials against which it acts, and the force and direction of the acting power. A sandy beach, for instance, has invariably the most gradual slope, gravel the next, shingles the next, and large masses of rock or stone the most precipitous. At the present time the stones of the breakwater, by constant friction, have worn away the sharp angles, and it has been found that the base on the side next to the sea is on the average fully eleven for one of perpendicular height.

It was proposed, therefore, to cover the side with a coating of stone twelve feet thick, to consist of blocks of twelve, fifteen, twenty, and thirty cubic feet, or from one to two tons each, which casing was to be carried to the height of twelve feet above the high-water mark of the highest spring-tides; the size of the stones to increase towards the summit, so as to be capable of resisting the percussion of the waves, which is there the strongest. It was calculated that this covering of twelve feet thick on both sides would require for each toise in length seventy cubic toises of stone, and that the whole length of the dike would consequently require 136,500 cubic toises, which, by deducting for the vacant spaces between the stones, would be reduced to 113,750 cubic toises of stone, or about one million and a half of tons. It was further calculated, that the expense of quarrying, the transport to the quays, the loading, conveyance, and discharging machinery, together with the commissioners, clerks, &c. would cost for each cubic toise deposited on the dike the sum of fifty-five livres, which for 113,750 cubic toises would amount to 6,256,250 livres, and, adding for contingencies 600,000 livres, the total estimate amounted to 6,856,250 livres.

The machinery employed for thus casing the breakwater may be seen in Plate CXXVIII., in which fig. 4 represents a section of a lighter on which it is erected.

AZX is an elevated deck or platform.

Y, three rollers of six inches diameter.

TK, two beams or sheers, moving on trunnions in grooves at T.

S, hooks to hold the sheers at the proper angle of inclination.

Break-water.

L, the axle of the windlass or wheels B, round which the rope of the pulleys passes. The wheels are 12 feet in diameter.

Fig. 5, a chasse-marée laden with blocks of stone.

E, the block and its hook laying hold of an iron chain round a stone.

F, the stone hoisted to the platform AZ (fig. 4), when the brace is unhooked at S; the hoisting continued until the summit K of the sheers is brought to V, when they rest against the frame which supports the windlass; the stone F is then lowered upon the rollers as at M, from whence it is pushed forward by men to the inclined plane, off which it is rolled into the water upon the side of the dike.

It was calculated that, by employing a certain number of these machines, 34,090 toises might be deposited in one year, reckoning only six working months, or 5682 toises per month, or that 487 superficial toises of the dike might be covered in one season, and the whole completed in four years. Very little progress, however, had been made at the commencement of the war in 1803. At that period the centre of the dike only had been brought above the high-water mark, in which was placed a battery and a small garrison of soldiers, the whole of which were swept away by a heavy sea, occasioned by a tremendous gale of wind in the year 1809, when all the buildings which had been erected on this part of the breakwater, the men, women, and children which composed the garrison, together with several workmen, were washed away; at the same time two sloops of war in the roadstead were driven on shore and dashed in pieces. This disaster was such as might have been expected. The effect of sinking large stones upon the small ones, already rounded by constant attrition, could not be otherwise; the latter acting as so many rollers, carried out the former even beyond the extremity of the base, to which the breakwater had naturally been brought by the action of the sea.

At present small spots only are visible above the surface of the sea at low water of spring-tides, and nowhere such spots exceed three feet in height; the intermediate spaces are from three to fifteen feet below the surface; and, taking the average, the whole dike from one end to the other may be about four feet below the surface of low water at the spring-tides. Near the middle, however, there is about 100 yards where the height rises to eighteen or twenty feet above high water, but it exhibits only a shapeless mass of ruins. In one spot a large heap of stones has been accumulated, as if to try how much weight might safely be trusted upon it, before the attempt be made to rebuild the fort. The largest of the stones in this mass may be about four tons, and they descend to the size of 200 or 300 pounds.

Of the remainder of the dike very few parts are visible at low water; and at this moment the greater part is four feet below the surface of low water. It is sufficiently high, however, to break the force of the waves, and to make the port of Cherbourg a safe anchorage in some winds for about forty sail of the line.

On the renewal of the war after the rupture of the treaty of Amiens, Bonaparte began to bestow a greater share of attention on the navy of France; and though for a time the unparalleled victory of Trafalgar checked his efforts, it did not induce him to abandon them. His plans were vast, and at the period of his fall were in rapid progress towards their completion. He had determined on a fleet of 200 sail of the line, and the noble port of Antwerp gave him every facility for ship-building. For the better security in forming a junction of his two great fleets of Brest and Antwerp, Cherbourg now became more valuable as a convenient port of retreat in case of acci-

dent; but it had no dock-yard, nor means of giving to a ship a large refit or repair. He might have thought too, as we believe most of our naval officers do, that a fleet of ships riding at anchor behind the breakwater are easily attackable by fire-ships, as the same wind which carries a vessel in at one entrance will carry her out at the other, and the course would lie directly through the centre of the fleet at anchor. Besides, it might be possible, in certain winds, under the lee of the centre part of the breakwater, to bombard a fleet at anchor in the roadstead within it.

He determined, therefore, to establish a large dock-yard at Cherbourg, not merely for repairing, but also for the construction of the largest class of ships of war; to dig a basin that should contain fifty or sixty sail of the line; to construct dry-docks and slips for building and repairing; and to make it a naval port of the first rank. In 1813 this basin was completed at an expense, as Bonaparte is said to have asserted when on board the *Northumberland*, and which has since been confirmed, of £3,000,000 sterling. A wet-dock of the same magnitude communicating with it was then begun.

The only description that we have been able to find in print of this great work, which took ten years in carrying into execution, is contained in a short letter from M. Pierre-Aimé Lair, secretary to the Society of Agriculture and Commerce of Caen, who was present at the ceremony of opening and consecrating the great basin, in presence of the Empress Maria Louisa, on the 27th August 1813. He describes this basin as excavated out of a rock of granite schist, or gneiss, the density and hardness of which increased as the workmen descended from the surface. He compares it to an immense trough dug out of a single stone, and capable of containing many millions of cubic feet of water. We now know, however, that M. Lair is mistaken; that it is not one mass of rock, but rock and gravel mixed; that the whole of the sides are cased with a well-constructed wall of red granite; and that a noble quay, built of the same material, and extending between the two forts of Galet and Homet, separates the basin and wet-dock from the sea.

The dimensions of the new basin he states to be about 900 feet in length by 720 in width, and the average depth fifty-five feet from the edge of the quay; and as this edge is five feet above the high water mark of the equinoctial spring-tides, the depth of water in the basin is then fifty feet, and the mass of water, after making allowance for a slope of the solid sides inward in an angle of forty-five degrees from the height of about twenty-five feet, amounts to about thirty millions of cubic feet; and that it is calculated to contain about thirty sail of the line. We have reason to think that it is considerably larger, about 1000 feet by 770 feet, and consequently contains a surface of about eighteen acres, which, at three per acre, will contain fifty-four sail of the line, and the adjoining wet-dock, when finished, an equal number. The dike or breakwater seems to be abandoned, the works having long been stopped, and the stone vessels going rapidly to decay. The French officers say indeed that it has occasioned the roadstead to become shallower, by the deposition of sand that has taken place.

The entrance canal leading from the outer harbour into the basin is at right angles to the latter, and its direction east-north-east. Its dimensions are as under:—

	Feet. In.
Width between the two moles in the direction of their axis.....	196 8
Width at its opening into the basin.....	308 8
Length from the axis of the moles or piers to the line of wall forming the side of the basin.....	274 0

ak-
er. The basin, having no gates, is said to have been excavated to the depth of nine feet below the bottom of the canal; the former having, as before mentioned, fifty feet water, and the latter only forty-one at high spring-tides, which, as they ebb twenty feet, would leave only twenty-one feet in the passage or canal at low water. This inequality, we presume, is intended to keep the ships afloat in the basin at low water, when the depth in the canal is not sufficient for that purpose; but after so much expense incurred in digging the basin, one would suppose a little more might have been expended in digging the canal to the same depth, so as to let ships pass into and out of the basin in all states of the tide; an advantage of the utmost importance for speedily securing the ships in the basin, when in danger of an attack from the enemy in the roadstead, or for speedily putting to sea and escaping the vigilance of a blockading squadron. No reason is assigned for leaving the basin without gates; but we suspect that M. Lair is again mistaken, and that the passage has depth of water sufficient for ships of the largest class to run into the basin at all times of the tide. But even here they do not lie in safety; for the wide entrance facing the north-east is covered only in that direction by the isle of Peleé, so that the water in the basin partakes of the swell in the road, which is sometimes so great as to make it necessary to apply ten or twelve cables to hold ships steady in the basin.

Another serious inconvenience likely to arise from this particular construction of the basin is, that whatever silt or mud is carried in by the tides must be deposited there, and cannot possibly escape. The quantity is probably not very great in the water of the Channel opposite to Cherbourg, but higher up towards Ostend it is very considerable. When we took possession of that port, it was found that, in the course of the revolutionary war, the harbour, by neglect, had been filled up with six or seven feet of mud.

Several pieces of cannon are intended to be mounted on the two piers, to protect the entrance into the basin. On one of them is likewise placed a light-house, and on the other a Semaphoric telegraph. Four slips of granite, for building large ships, were at this time constructed on the southern side of the basin, and on each of them was a ship of the line in progress; *L'Inflexible* of 118 guns, *Le Centaure* of eighty, *Le Jupiter* and *Le Généreux* of seventy-four guns each. Two other ships of the line were on the stocks without the dock-yard, nearly ready for launching, *Le Zélandais* of eighty, the first line-of-battle ship laid down at Cherbourg, and the *Duguay-Trouin* of seventy-four guns; and in the roadstead were *Le Polonais* and *Le Courageux*. In the centre of the same side of the basin, with two slips on each side of it, a noble dry-dock was cut out, or rather built, of solid granite, in which ships of the largest class might be built or repaired. Its dimensions were,

	Feet.	In.
Length.....	230	0
Width.....	74	0
Depth.....	26	6

Thus the ships built on the four slips may be launched into the basin, and at once docked out of it.

Few store-houses, or other buildings necessary for a naval establishment, are as yet erected; but there is an ample space laid out for every purpose that can be required to make Cherbourg one of the first naval arsenals in Europe; and a narrow canal, between the walls of Fort du Homet and the wall of the wet-dock, leads to a most convenient space for mast-ponds and mast-houses.

The fortifications for the protection of the anchorage in the roadstead, and the new naval arsenal, are, 1. Querque-

ville; 2. Fort du Homet; 3. Fort du Galet; 4. Fort Royal, on the isle of Peleé. Fort Royal and Fort du Homet have circular faces towards the sea, with each two tiers of guns, and turrets above them; the former mounts about eighty guns, the latter sixty-five, and Querqueville about thirty guns.

The principal channel from the road to the sea is at the western end of the breakwater, which, for large ships, is not more than half a mile in width; and this want of space will always make it difficult for ships of the line to work out: but, on the other hand, a fleet may push out to the westward in southerly winds, which lock up the English ports in the Channel.

The eastern channel is a very indifferent one, and, from the position of the isle of Peleé and the main, it is likely to become worse, from the accumulation of sand, which the French officers say is actually the case.

Such, then, were the mighty preparations of the extraordinary man who ruled France, for the destruction of the naval power of Great Britain, and with it of our national glory, pride, and prosperity, which, whether elated with success or depressed by reverses, he never ceased to devise schemes for humbling. And he had sufficient cause for his hatred, well knowing that it was England, and England's navy, that opposed the only obstacle between him and the subjugation of the world to his dominion.

To give the greater eclat to this grand undertaking, he sent the Empress Maria Louisa to be present at the opening of the basin. When the time arrived for the water to be let in, and the dam broken down, her approach was announced by flourishes of warlike music and numerous discharges of artillery. "Cries of joy," says M. Lair, "were mingled for a long time with the thunder of the batteries. Her majesty took her place in the pavilion which had been prepared for her, when the bishop of Contances, surrounded by his clergy, advancing towards her, pronounced an address suitable to the occasion. After the ceremonies and customary prayers, he turned round towards the basin, and blessed this work of man. It is delightful to see a nation consecrating by religious rites an event so memorable, and causing the divinity to intervene in all its grand undertakings." He speaks with rapture on the gratification he derived from seeing men born on the shores of the Tiber, and on the banks of the Guadalquivir, working under the direction of French engineers, at the establishment of a port in the Channel, formidable to the English navy; and he suffers no expression of regret to escape him at the idea of these poor Italian and Spanish prisoners of war being compelled to labour in chains at a work for which they were not paid, and in which they could not take the least possible interest.

The BREAKWATER IN PLYMOUTH SOUND is a work of a Break-
similar nature to that of Cherbourg, but constructed on water in
sounder principles, with less machinery and fewer people. Plymouth
Compared in extent and dimensions with that of Cher- Sound.
bourg, it is only in the ratio of about one to four.

There is no port and harbour on the south-west coast of England possessing so many advantages as Plymouth; none so well situated for assembling and equipping a fleet to watch the movements of the enemy in the harbour of Brest. Its dock-yard may be considered as the second in the kingdom in point of size, convenience, and effective strength; while the margin of it stretches along the magnificent harbour of Hamoaze,—a noble expanse of water, nearly land-locked, of a capacity sufficient for mooring safely a hundred sail of the line in excellent anchorage, and in water that carries its depth to the very quays of the yard. On the opposite or eastern side of the Sound, and at the distance of about three miles from

Break-
water.

Break-
water.

Hamoaze and the dock-yard, is another sheet of water called Catwater, not quite so deep, nor so well sheltered, as Hamoaze, but, since the progress made in the breakwater, forming a safe and commodious harbour for merchant vessels of every description. These two harbours open into Plymouth Sound and Cawsand Bay, in which ships employed in the blockade of Brest, or those refitted in Hamoaze, have been accustomed to assemble and prepare for putting to sea. But the very exposed situation of Plymouth Sound, and the heavy swell that almost constantly rolled in, especially when the wind blew fresh from the south-west to the south-east, made it so inconvenient and so unsafe an anchorage for ships of the line, that, during the late war, the fleet employed in blockading Brest had been in the practice of bearing up, when driven from its station, for the more distant anchorage of Torbay, though little better with regard to security, and worse in every other respect, than Plymouth Sound. It is, for instance, a more ineligible rendezvous for the western squadron, from the chance of the fleet being caught there by an easterly wind, and unable to get out, when it is the most favourable wind for the enemy to put to sea; from the danger to which the ships are liable when so caught at an anchorage so open and exposed; and from the inconvenience, delay, and expense of obtaining the necessary supply of stores and provisions from the other ports, there being none at Torbay.—In short, this open and exposed bay bore so bad a character among naval officers, that Lord Howe used to say it would one day be the grave of the British fleet.

It is, besides, an object of the first importance to the efficiency of every naval arsenal, to have a safe and commodious roadstead in its neighbourhood, like that of Spithead to the harbour and dock-yard of Portsmouth. Here those ships which may have gone through a course of repair or refitment, or those new from the stocks, may assemble and complete their final equipment for sea; and here, also, ships returning from sea may safely lie at anchor till the wind and tide may serve them to go into harbour. But in Plymouth Sound, ships coming out of Hamoaze, or ships going into that harbour, had no such security. By the rolling sea that set in, they were exposed to the double danger of parting their cables, or striking against the hard and rocky bottom, either of which would be almost certain destruction.

Its his-
tory.

It was most important, therefore, to render Plymouth Sound, if possible by any means, and almost at any expense, a safe roadstead for ships of war. To ascertain the practicability of this measure, Mr Rennie the civil engineer, and Mr Whidby the master-attendant of Woolwich dock-yard, were sent down by Lord Howick, now Earl Grey, at the suggestion, we believe, of Lord St Vincent, in the year 1806, with directions to examine and report, whether by any, and by what means, a sufficient shelter might be given to insure a safe anchorage for a fleet of ships of the line. The report was favourable; and several plans were offered for sheltering this sound, so as to render it capable of containing in safety above fifty sail of the line at their anchors. Nothing, however, was done or attempted, notwithstanding the increased and mighty preparations of the enemy, till Mr Yorke presided at the Board of Admiralty, when one of his first measures was to carry into execution this grand and important national object; the most important that perhaps was ever undertaken for the glory and the safety of the British navy. The delay that took place can only be explained by the frequent changes of the Board of Admiralty, which, we believe, have been fatal to many important measures for the benefit and advantage of this great bulwark of the nation.

Of the plans proposed for sheltering the Sound, one was to throw a pier from Staddon Point to the Panther Rock, a distance of 2650 yards; another, to construct a pier from Andurn Point to the Panther, a distance of 2900 yards; and a third, to carry a pier from the same Point to the Shovel Rock, being only 900 yards.

The objection urged against throwing out piers from either of these Points, and abutting against the shore, was principally grounded on the certain effect they would have of changing the current of the flux and reflux of the tide to the opposite side of the Sound, and of increasing its strength and velocity on that side, while it left all calm on the other; the inevitable consequence of which would be a deposition of mud or silt in the calm part or eddy, which, in process of time, would shallow the water, already not too deep, to such a degree as to unfit it for the reception of large ships of war.

Besides, of the three passages for large ships into Plymouth Sound from the sea, the two best are those on the two sides, while the worst was that in the middle. Either of the plans, therefore, which proposed piers to be thrown from the mainland, must have destroyed one of the best passages, and left the worst open, which was nearest to the anchorage behind the proposed pier. The middle passage might, in fact, be almost considered as shut up against very large ships by the St Carlos and the Shovel Rocks; whereas, if this middle passage should be shut up altogether, it would rather serve to deepen, by giving an increased velocity to the tide, which would scour out the bottom, than to shallow the two side passages.

On these considerations, Messrs Rennie and Whidby proposed that an insulated pier or breakwater should be thrown across the middle of the entrance into the Sound, having its eastern extremity about sixty fathoms to the eastward of St Carlos Rock, and its western end about 300 fathoms west of the Shovel, the whole length being about 1700 yards, or close upon a mile. They stated with confidence, that such a breakwater might, with every chance of success in its favour, be constructed; and that it would give shelter to ships in the Sound, without any danger of lessening the depth of water.

The middle part of the breakwater was proposed to be carried in a straight line for the length of 1000 yards; but they recommended that the length of 350 yards at each end should incline towards the straight part at an angle of 120°. See the figure, Plate CXXIX. These inclined ends would not only give shelter to a greater extent of the Sound, but would, in a greater degree, prevent the rushing in of the tide from agitating the water at the anchorage, than if the two extremities were left in the same straight line, and at right angles with the direction of the current into the Sound.

It was also proposed, in order to cover the Sound more effectually, that a pier should be thrown from Andurn Point towards the principal breakwater, of about 800 yards in length, with the same inclined point of 120° as the head of the breakwater. This pier, however, does not appear to have been thought necessary, and might have been in some respects injurious to the Sound. It might, however, have made Bouvisand Bay a good anchorage for frigates and smaller vessels, and given them the advantage of a fine stream of fresh water, which falls into that bay.

It was recommended, as the most practicable and best mode of constructing this great work, to heap together promiscuously large blocks of stone, which were to be sunk in the line of the intended breakwater, leaving them to find their own base, and take their own position; and it was conceived that stones of the weight of from one and a half to two tons each would be sufficiently large to keep

their places, without being rolled about by the tremendous swell which, in stormy weather, is thrown into Plymouth Sound; and thus avoid the inconvenience as well as loss of time and labour which the French had experienced at Cherbourg by throwing down small rubble stones. It was thought, that, in those places where the water was five fathoms or thirty feet deep, the base of the breakwater should not be less than seventy yards broad, and the summit ten yards, at the height of ten feet above the low water of an ordinary spring-tide; in other words, that the dimensions of the breakwater in those places should be forty feet high, thirty feet across the top, and 210 feet wide at the foundation.

The surrounding shores of Plymouth Sound and Catwater were next examined, with a view to determine from what quarter materials for this great undertaking could most conveniently be obtained, as to quality, cheapness, and celerity of conveyance. On the west or Cornish side of the Sound, nothing appears but hard granite; at the head of the Sound, and in Catwater, on the Devonshire side, all is marble and limestone. In Catwater alone, it was estimated, on a rough calculation, that 20,000,000 of tons might be procured in blocks fit for the work, which was about ten times the quantity that would probably be wanted. The time required for the completion of the work depended on a variety of circumstances. It is obvious that, if the two sides of the Sound had furnished proper materials for the purpose, the time would have been considerably abridged, as, in that case, when the wind was easterly vessels might deposit stones on the eastern end of the breakwater, and in westerly winds on the western extremity, and the work would thus be proceeding with an uninterrupted progress; whereas, if the stones were to be brought from one point, and that point was on the shore of Catwater, a strong southerly and south-westerly wind, those most prevalent in this country in the winter months, would generally impede and frequently render it impossible for vessels to go off with their cargoes.

Catwater, however, having many advantages, especially for the convenience of loading the vessels, and the facility of procuring blocks of any size from the quarries, was considered, on the whole, as entitled to the preference over any other place. Besides, the quarries here being in the neighbourhood of villages, lodgings and conveniences would be afforded for the workmen; and, on the whole, it was calculated that the work might be completed from hence at a cheaper rate, and perhaps in less time, than from situations much nearer to it, but much more exposed to the wind and waves.

An estimate of the expense could not be made with any degree of accuracy, as no correct section of the bottom had been taken. Supposing, however, the great breakwater to be 1700 yards in length, thirty feet in width at the top when carried ten feet above low water of spring-tides, with a slope on the southern or sea side of three feet horizontal to one foot perpendicular, and on the Sound or land side of one foot and a half horizontal to one perpendicular, it was calculated that the whole mass of stone required would be about 2,000,000 of tons. If then a hundred sail of vessels of fifty tons burden each were employed in carrying stone, and each vessel carried only 100 tons a week, the quantity deposited in one week would amount to 10,000 tons, or 500,000 tons a year, and at this rate the breakwater would be completed in four years; but making allowance for time lost in preparations, contingent delays, unfavourable weather, and deductions in the quantity of stone for the shallow parts over which the line of the breakwater was carried, the completion of the work might safely be calculated within the period of six years.

Nor would the building of the pier from Andurn Point, if so determined, increase the time of completion. If carried from the shelving rocks within the Point, leaving a passage between them, the pier would require about 360,000 tons of stone, which, by employing about thirty vessels, might be deposited in three years.

It was recommended by the gentlemen above mentioned, that the great breakwater should be begun on the Shovel and extended on both sides of it, as, by so doing, the effect produced on the Sound would be observed as the work proceeded; and that buoys should be placed along the line, so that the whole of the vessels employed might, if necessary, deposit their cargoes at the same time without interrupting each other.

The rough estimate for completing this great national work, made on the grounds above stated, was as follows:

Estimate of the Probable Expense of a Breakwater and Pier for the Sheltering of Plymouth Sound and Bournisand Bay.

2,000,000 tons of limestone, in blocks from 1½ to 2 tons weight each, for the great breakwater, at 7s. 6d. per ton.....	L.750,000	0	0
360,000 tons in the pier proposed to be built from Andurn Point, at 7s....	126,000	0	0
Contingencies, say at 20 per cent. on the whole.....	175,200	0	0
Total for the great breakwater.....	L.1,051,200	0	0

Estimate of the Probable Expense of a Cut-Stone Pier and Two Light-houses to be built on the top of the Great Breakwater.

42,000 cubic yards of masonry, in the out and inside walls of the pier, at 27s.....	L.44,700	0	0
62,000 cubic yards of rubble filling between the out and inside walls, at 6s.	18,600	0	0
Paving the top of the pier with large blocks of stone, 8500 square yards...	22,950	0	0
Two light-houses, with reflectors and and argand lamps.....	5,000	0	0
Contingencies 20 per cent.....	28,650	0	0
	L.119,900	0	0
Breakwater,	1,051,200	0	0

Total estimate of completing the works..... L.1,171,100 0 0

It was not until the opinions of the best engineers, men of science, and naval officers eminent in their profession, had been collected, compared, and seriously considered, that Mr Yorke determined to carry into execution this great undertaking. The principal objection started against it was, that it might cause the anchorage in the Sound to be destroyed in the course of time by the deposition of mud and silt along the whole eddy within it. But there does not appear to be any solid ground for this objection. The water brought by the tides from the sea is at all times perfectly clear and transparent, and that which proceeds from Hamoaze, and is supplied by the Tamar and the Tavy, is almost wholly free from any alluvial matter, these rivers holding their course through a fine granitic soil. The fact is sufficiently proved by the circumstance of no deposition taking place in the recesses of Hamoaze along the dock-yard wall leading into the docks, nor in the numerous eddies that are caused by the projecting jetties and salient angles of that wall. Another objection started against the undertaking was, that by the diminish-

Break-water.

Break-water.

ed quantity of water thrown by the tide into Hamoaze and Catwater, the Sound would gradually fill up, and these harbours be destroyed. But no perceptible alteration has as yet taken place in the height of the water in Hamoaze, or in the strength or set of the tides.

Commencement of the work.

A rock of limestone, or rather gray marble, situated at Oreston, on the eastern shore of Catwater, consisting of a surface of twenty-five acres, was purchased from the Duke of Bedford for the sum of L.10,000. Quays for shipping the stone were erected in front of it; iron railways leading from the quarries to the quays were laid down; ships were hired by contract to carry off the stone, and others built at the dock-yard. Mr Whidby was appointed to superintend the work. The quarries were opened on the 7th August 1812; the first stone was deposited on the 12th of the same month; and, on the 31st March 1813, the break-water made its first appearance above the surface of the Sound at low water of the spring-tide. The system of quarrying the stone was conducted with admirable skill, and stones of the proper size were obtained with less waste of small rubble than might have been expected. In working these quarries an extraordinary phenomenon was discovered in the very body of the great mass of this old marble rock. At the depth of sixty-five feet from the summit of the rock, and twenty-five from the margin of the sea, a cavity, or rather a nodule of clay, was discovered, of twenty-five feet long and twelve square, or thereabouts, in the midst of which were found several bones of the rhinoceros, in a more perfect state, and containing less animal matter in them, than any fossil bones that have yet been dug out of rock or earth.

Machinery employed.

The vessels employed for carrying off the large blocks of stone were of a peculiar construction, adapted to convey with ease masses of marble weighing from three to five tons each. These great blocks of marble were placed on trucks at the quarries, and run down from thence on iron railways to the quays, against which the vessels lay with their sterns. The two stern ports were made sufficiently large to receive the trucks with the stones upon them. Each truck was passed separately through the port-hole on an inclined plane, and run to the fore-part of the vessel in the hold on an iron railway. The two sides of the hold of the vessel were calculated each to contain eight of these loaded trucks, which, at five tons on each truck, gave eighty tons of stone for one cargo. The stones thus placed on the trucks remained till the vessel arrived at the point in the line of the breakwater where they were to be deposited. By means of a crane on the deck of the vessel, the two trucks nearest to the two stern ports were then drawn up the inclined plane, and run upon a frame on movable hinges, called the *typing-frame*; by the falling of this frame in the manner of a trap-door the stone or stones were discharged from the trucks on the slope of the break-water; but the typing-frame remained, by means of a catch, in the position in which it was left at the moment of discharging the stones, until the empty truck was pulled up by the crane to the after-part of the deck, from whence it was run forward to make room for the second pair of loaded trucks in the hold. The catch being now disengaged, the typing-frame returned to its former position, ready to receive the next pair of loaded trucks, and so on till the whole sixteen were discharged; and the light trucks ran upon the deck of the vessel, ready to be run out at the quay, and from thence to the quarries, to take in fresh loads of stone. In this manner a cargo of eighty tons was discharged in the space of forty or fifty minutes. The vessels were placed in the proper places for depositing the stones by means of buoys, and the exact line of the break-water was preserved by observing lights or staves placed at a distance on the shore.

The following description, referring to Plate CXXVIII., will convey an accurate idea of these excellent vessels for the purpose for which they were constructed.

Fig. 1 shows the stern of the vessel in the act of depositing the stones. The runner R being hooked to the fore-part of the truck, raises it up, and by that means tips the stone overboard. When the stone is in the act of being drawn up out of the hold on the inclined plane B (fig. 3), the runner is hooked to the fore-part of the truck, and lashed down to the after-end over the stone, which prevents the latter from sliding off the truck in its progress up the inclined plane. The empty trucks are for the most part lodged on the fore-part of the deck, and some placed on an edge against the side of the vessel.

Fig. 2 shows the stern of the vessel when loaded, with the ports up or closed.

Fig. 3 is a longitudinal or sheer-section of the vessel when loaded, with the trucks on one side of the hold and deck, showing the number which the vessel usually stows on each side. The stones being frequently longer than the trucks, the number carried in the hold must be proportioned accordingly. In bad weather it is unsafe to send many trucks on deck; and, in general, not more than four are sent into the Sound in that way at one time; the amount of the cargoes, therefore, vary, according to circumstances, from forty to sixty-five tons; the largest stone hitherto deposited being about eight tons.

The after-part of the deck under the tiller is divided into two parts length ways, and made to move up and down; the fore-parts are secured to a beam by hinges. This movable deck, when raised as at X, allows the stones to come out of the hold, and when down, as at Y, serves to convey the empty truck from the port to the deck, in order to make room for another stone.

D is a common windlass for heaving the trucks out of the hold up the inclined plane B.

C, the hinges of the typing-frame.

Ten vessels of this construction, for carrying large masses of stone, built in the King's Yards, and forty-three hired by contract, averaging about fifty tons each, were employed in conveying stones from the quarries. The contractors' vessels were not of the same construction as those in the immediate employ of government; they carried stones of less weight, which were hoisted out of the hold by a chain and windlass, and thrown overboard. A load of fifty tons was discharged from one of these vessels in about three hours. By all these vessels the quantity of stone deposited in 1812 was 16,045 tons; in 1813, 71,198 tons; in 1814, 239,480 tons; in 1815, 264,207 tons; and in 1816, up to 12th August, 206,033 tons, at which time the total quantity of stone sunk amounted to 896,963 tons; and at the conclusion of the year to upwards of 1,000,000 tons.

Of this quantity the proportions of the different sizes of the blocks deposited were nearly as follow:

	Tons.
Of one ton each stone, and under.....	423,904
Of one to three tons each.....	309,706
Of three to five tons each.....	150,593
Of five tons and upwards	12,760

The original contract price for quarrying the stone was 2s. 9d. per ton, and the original contract price for conveying it to the breakwater 2s. 10d. per ton; but the former was reduced to 2s. 5d., and the latter to 1s. 10d. per ton. The cost of each ton of stone sunk in the breakwater, including the building of quays, purchase of land, salaries, and every other expense, according to the nearest calculation that can be made, amounted to about 8s. 1½d., which, upon the whole quantity deposited, gave a total sum expended up to 12th August 1816 equal to L.364,000. And as the work might be considered as more than half com-

pleted, it would have been finished considerably within the original estimate, and, if parliament had thought fit to grant the money, within the time.

The greatest quantity of stone sunk in any one week was 15,379 tons; and the part of the breakwater, at the date just mentioned, above the level of low-water spring-tides, was in length 1100 yards. The length completely finished to the height of three feet above the level of the highest spring-tides, and thirty feet wide at top, was at the same time 360 feet. The large stones of the upper part of the breakwater were deposited to any nicety by means of a vessel constructed for the purpose, having the same sheer or slope at the bow with the side of the work, so that by a projecting beam or mast the largest stones could be taken out of the vessel, and placed on the opposite side, or middle, or any other part of the breakwater.

The small establishment, and the quick manner in which this great work was carried on, form a curious contrast with the multitudes employed on the breakwater of Cherbourg, the time occupied by that undertaking, and the parade and ostentation with which it was conducted.

The whole establishment for carrying on the Plymouth breakwater was as follows:

	Persons.
A superintendent, with proper officers and clerks, to keep and control the accounts.....	10
Warrant officers and masters of the ten stone vessels in the immediate employ of the public.....	21
Seamen and boys to navigate these vessels.....	90
Seamen employed in the superintendents' vessels, the light vessel, boats' crews, &c.....	45
Masons, blacksmiths, carpenters, sail-makers, and labourers, employed at Oreston.....	39
In the immediate pay of government.....	205
Seamen employed in the contractors' vessels.....	170
Quarrymen, labourers, &c. employed at Oreston by the contractors.....	300
Total establishment.....	675

The result of this great work has completely answered the expectation of its warmest advocates. The good effects of it were, indeed, very sensibly felt at the end of the second year, when about 800 yards of the central part, where the water was shallowest, were visible at low-water spring-tides. The swell was then so much broken down and destroyed at the head of the Sound, that the fishermen were no longer able as heretofore to judge of the weather outside the Sound; and ships of all sizes, and among others a French three-decker, ran in with confidence, and anchored behind the breakwater. Since that time near two hundred sail of vessels of all descriptions, driven in by tempestuous weather, have at one time found safe shelter within this insulated mole, where a fleet of twenty-five to thirty sail of the line may at all times find a secure and convenient anchorage, with the additional advantage of having a stream of excellent water from a reservoir constructed above Bouvisand Bay, capable of containing from ten to twelve thousand tons, or a quantity sufficient to water fifty sail of the line. This water is brought down in iron pipes to Staddon Point, opposite to the anchorage, where a jetty has been completed, from which the water descends through the pipes into the ships' boats. The whole expense of this most useful appendage to the breakwater is calculated at about L.16,000.

During the winter of 1816-17 the gales of wind were more frequent and tremendous than had been known for many years; and, on the night of the 19th January, such a hurricane came on as had not been remembered by the oldest inhabitant. The tide rose six feet higher than the

usual height of spring-tides. The *Jasper* sloop of war, and the *Telegraph* schooner, being anchored without the cover of the breakwater, were driven to the head of the Sound, and both lost; but a collier deeply laden, and under its cover, rode out the gale. No damage was sustained by any of the shipping in Catwater; but it was the general opinion, from former experience, that, if no breakwater had existed, the whole of the ships therein must have been wrecked, and the storehouses and magazines on the victualling premises, and most of the buildings on the margin of the sea, must have been entirely swept away. Till this tremendous gale the breakwater had not sustained the slightest damage from the heavy seas that, through the winter, had broken against it with unusual violence, not a single stone having moved from the place in which it was originally deposited; but after the hurricane, above-mentioned, and the high tide which accompanied it, it was found that the upper stratum of the finished part, extending about 200 yards, and thirty yards in width, had been displaced, and the whole of the huge stones, from two to five tons in weight each, had been carried over and deposited on the northern slope of the breakwater. In no other part could it be discovered that a single stone had been displaced. Since that time a considerable portion of the sea-front has been eased with masonry of immense masses of stone, but smoothly and beautifully laid; and the better to protect this, the foot of the slope is being extended seaward, in order to protect the foot of the masonry, by throwing in a great quantity of large and rubble stones, which will complete the work within the original estimate, and, it is calculated, some time in the year 1833.

The want of a harbour, or any place of safety to which ships can resort in bad weather, or in distress, between the ports of Plymouth and Portsmouth, led to the suggestion of Portland Roads being converted into a secure harbour by means of a breakwater. It was estimated that the construction of such a stone dike, extending from the north-east part of Portland Island, about two miles and a quarter in length, covering an anchorage of about four square miles, and completely sheltering the pier, harbour, and bathing place of Weymouth, would require about four millions of tons of stone, five years to complete it, and an expense of about six hundred thousand pounds Sterling. The capstone alone, which covers the Portland stone, and which, being unmarketable, is not only useless, but a great incumbrance, would be sufficient to complete this great undertaking. Such a secure anchorage in this situation, in which the largest fleets, either naval or mercantile, might ride at anchor in all winds and the most stormy weather in perfect security, is not unworthy the consideration of the public; and, perhaps, in the present increased state of our population, and the difficulty of finding employment for the labouring poor, there can be no truer policy than that of carrying on great national works of public utility, were it only for the sake of encouraging industry, instead of expending an equal, or probably a far greater sum, for the support of idleness and the encouragement of vice in those parochial buildings too frequently miscalled work-houses.

(M.)

BREAM. See *ICHTHYOLOGY*, *Index*.

BREAST, in *Anatomy*, denotes the fore-parts of the thorax. Smiting the breast is one of the expressions of penitence. In the Romish church the priest beats his breast in rehearsing the general confession at the beginning of the mass.

BREAST-HOOKS, in *Ship-Building*, are thick pieces of timber incurvated into the form of knees, and used to strengthen the fore-part of the ship, where they are placed at different heights directly across the stem, so as to unite it with the bows on each side. The breast-hooks are

Break-
water
||
Breast-
hooks.

Propriety
of a break-
water in
Portland
Roads.

Beneficial
result of
this great
work.

Breast-
plate
||
Brechin.

strongly connected to the stem and hawse-pieces by tree-nails, and by bolts driven from without through the planks and hawse-pieces, and the whole thickness of the breast-hooks, upon the inside of which these bolts are forelocked or clinched upon rings. They are usually about one third thicker than, and twice as long as, the knees of the decks they support.

BREAST-Plate, in *Antiquity*, a piece of armour worn to defend the breast, and believed to have been originally formed of hides or hemp, twisted into small cords, but latterly made of brass, iron, or other metals, which are sometimes hardened so as to be proof against the greatest force.

BREAST-Plate, in *Jewish Antiquity*, one part of the vestments anciently worn by the high-priests. It was a folded piece of the same rich embroidered stuff of which the ephod was made; and it was set with twelve precious stones, on each of which was engraven the name of one of the tribes. They were set in four rows, three in every row, and were divided from one another by little golden squares or partitions, in which they were set. The names of these stones, and those of the tribes engraven on them, as also of their disposition on the breast-plate, were as follow:

<i>Sardine</i> REUBEN.	<i>Emerald</i> JUDAH.	<i>Ligare</i> GAD.	<i>Beryl</i> ZEBULON.
<i>Topaz</i> SIMEON.	<i>Sapphire</i> DAN.	<i>Agate</i> ASHER.	<i>Onyx</i> JOSEPH.
<i>Carbuncle</i> LEVI.	<i>Diamond</i> NAPHTHALI.	<i>Amethyst</i> ISSACHAR.	<i>Jasper</i> BENJAMIN.

This breast-plate was fastened at the four corners, those above to each shoulder by a golden hook or ring at the end of a wreathed chain; and those below to the girdle of the ephod, by two strings or ribbons, which had likewise two rings and hooks. This ornament was never to be severed from the priestly garment; and it was called the Memorial, to remind the high-priest how dear those tribes ought to be to him, whose names he wore on his breast. It is also called the Breast-plate of Judgment, because it had the divine oracle of Urim and Thummim annexed to it.

BRECHIN, a town of Scotland, in the county of Forfar and parish of Brechin, is situated on the face of a hill about the centre of the parish, on the left bank of the River South Esk, which is crossed below the town by a stone bridge of two arches. Brechin consists of one main street running north and south, with several smaller streets. On the south, the town is continued by two suburbs named the Upper and Nether Tenements, which hold in feu of the families of South Esk and Panmure.

This town is said to have been the capital of Pictavia, and the royal seat of the Pictish kings; and the hill of Caterthun, about four miles north of the town, surrounded with an immense coronal of loose stones, is supposed to have been a fortification belonging to that ancient nation. In the earliest record extant, the name of the town is spelt as at present; but as in the days of St Columba there was a noted Druid of the name of "Broichan," probably the town may have derived its appellation from some such source. The Culdees are reported to have had a convent here; and their abbot Leod was witness to the grant made by King David to his new abbey of Dunfermline. In after-times the Culdees gave way to the Mathurines or Red Friars, the ruins of whose house, according to Maitland, are still to be seen in the College or Chandry Wynd.

Brechin was founded into a bishopric by David I. about

1150. At the Reformation its revenues amounted in Brechin money and kind to £700 per annum; but after that event they were miserably reduced by various grants, and mainly by the alienation of lands and tithes, by Alexander Campbell, the first Protestant bishop, to his chieftain the Earl of Argyll. In 1572 James VI. with consent of John Earl of Morton, Regent, founded an hospital in the burgh. "Mr George Buchanan, pensioner of Crossragwell," is one of the witnesses to the grant, which was ratified by his majesty in 1587, when he attained majority. The magistrates and council are patrons of this charity, from which they give a small weekly allowance to the poor, no hospital apparently having ever been erected. William de Brechin founded a chapel in 1256, called Maison de Dieu. Albinus, bishop of Brechin in the reign of Alexander II. was witness to the grant. Parts of the walls of the chapel still remain in the Maison Dieu Vennel, a little west of the High Street, and prove that the chapel had originally been an elegant little building. The house itself, and the property about it, with the superiority of some other lands, are generally gifted by the crown to the rector of the grammar-school during his incumbency, who hence takes the title of preceptor of Maison-dieu. The cathedral, which is now used as the parish church, was originally a handsome Gothic building; but its appearance has been much injured by modern "improvements." The steeple attached is a noble-looking square tower, with an octagon spire, rising to the height of 128 feet. Close to the church stands the round tower, one of those singular structures which are generally supposed to have been places of look-out belonging to the Picts, although their real use has long baffled the research of antiquaries. These towers are peculiar to North Britain and Ireland; in the latter they are frequent, in the former only two at this time exist, one at Brechin and another at Abernethy. There is no stair in the Brechin tower, and the only access to the top is by means of six ladders placed on wooden semicircular floors, which rest on circular projections within the tower. The height from the ground to the roof is eighty-five feet, the inner diameter within a few feet of the bottom is eight feet, and the thickness of the wall at that part four feet two inches, so that the whole diameter is nearly sixteen feet; the circumference is very near forty-eight feet; the inner diameter at top is six feet seven inches, the thickness of the wall two feet ten inches, and the circumference thirty-eight feet eight inches. These proportions give the building an inexpressible elegance. The top is roofed with an octagonal spire eighteen feet high, which makes the whole height of the building 103 feet. Certain it is, that during strong winds this tower has often been observed to vibrate. A stone built into the wall of the church-yard, evidently modernized, but most probably copied from an older stone, records, in not inelegant Latin, that during 1647 six hundred persons died of the plague in Brechin in the course of four months.

Within the burgh there is a house said to have been a *Hospitium* of the knights templars, now appropriately used as an inn. These knights seem to have had some lands in the neighbourhood, as there is a piece of ground close by Brechin bearing the title of Temple Hill of Bothers. A little to the north of this last-mentioned place is Huntly Hill, remarkable for the battle fought there between the Earls of Huntly and Crawford, in consequence of the rebellion raised in 1452, on account of the murder of the Earl of Douglas in Stirling Castle. The victory fell to the royalists under Huntly, who has hence given his name to the ground.

Brechin Castle, the seat of Lord Panmure, stands on the brink of a perpendicular rock overhanging the South Esk, a little to the south of the town. This castle was

con. besieged by the English under Edward I. in 1303, and was for twenty days gallantly defended by Sir Thomas Maule, ancestor of the family of Panmure, who was slain by a stone thrown from an engine placed on the opposite rising ground, when the castle was instantly surrendered. The south front of the castle above the river presents a romantic mixed mass of buildings, covered with ivy, and showing some remains of the original structure. The west front forms a regular building, in the style of the seventeenth century.

Brechin was burnt by the Danes in 1012, and by the Marquis of Montrose in 1645. At present it has a neat appearance, the excellent free-stone quarries in the vicinity giving every opportunity for substantial erections. The chief manufactures of this place consist of various branches of the linen trade. There is also an extensive distillery in the town, and a smaller one in the immediate vicinity; and at the mills of Brechin a good deal of wheat is ground for distant markets. Brechin has a market every Tuesday, which is well frequented by dealers in grain. About a mile from the town, on the Trinity Muir, four annual fairs are held, the principal of which takes place in June. The town is governed by a provost, two bailies, a dean of guild, seven merchant and two trades' counsellors. This burgh is the seat of a presbytery, and, besides the Presbyterian church, it contains a neat Episcopal chapel, two meeting-houses belonging to the United Associate Synod, one belonging to the Original Seceders, and a Relief chapel. There is an endowed grammar-school under a rector, and a parochial school under two teachers besides assistants, with several private schools, in the town.

Maitland, the laborious historian of Edinburgh and London, and Dr John Gillies, the historian of Greece, were natives of this place. James Tytler, an eccentric and unfortunate personage, one of the contributors to the early editions of the *Encyclopædia Britannica*, was born in the immediate neighbourhood. The population of the town and Tenements in 1831 was 5060. Brechin is eight miles from Montrose, thirteen from the county town of Forfar, forty-two from Aberdeen, and the same distance from Perth. Long. 2. 18. W. Lat. 56. 40. N.

BRECON, or BRECKNOCK, a market and borough town, the capital of the county of the same name, in South Wales, 168 miles from London, is situated at the confluence of the rivers Hondey and Uske. Its ancient castle, an object of great curiosity to the antiquarian, is said to have been built in the reign of William Rufus. There are several traces of Roman encampments in the vicinity. Its present state is not flourishing, as the manufactures of cloth and of stockings which once existed have been removed to more favourable spots. It contains three churches, and is governed by a corporation, which, with the freemen, returns one member to parliament under the influence of Sir Charles Morgan. There are markets on each Wednesday and Saturday. The inhabitants amounted in 1801 to 2576, in 1811 to 3196, in 1821 to 4193, and in 1831 to 5026.

BRECONSHIRE, or BRECKNOCKSHIRE, in South Wales, is divided from Radnorshire by the river Wye; its other boundaries are artificial. Its length is twenty-nine miles, the breadth of its southern basis thirty-four, and its circumference rather more than a hundred. It contains nearly 500,000 acres of land, not one half of which is either in a state of cultivation or adapted to it. Its form is irregularly triangular, narrowing towards the northern extremity. It is divided into six hundreds; and contains the county town, Brecon, and three market-towns besides, Crickhowel, Biulth, and Hay. There are in it a hundred and eleven parishes, and places paying parochial rates, according to the last returns to parliament respecting these rates.

Breconshire is one of the most mountainous counties in Wales; and the Van, or Brecknock Beacon, is one of the loftiest mountains. Ridges of hills, which form the separation of this from most of the adjacent counties, shelter it in such a manner as to render it temperate. It appears, from observations made in the year 1802, with a rain gauge, that $26\frac{1}{4}$ inches of rain fell at Brecon. There is a considerable variation not only in the surface of the country, but also in the nature of the strata. In the hundred of Biulth the soil is remarkably argillaceous, and the water does not sink sufficiently deep; in the Vale of Uske, on the contrary, it is too porous to retain the necessary moisture. In general, the soil of the vales consists of a light loam, lying on a deep bed of gravel; the soil of the hills is for the most part argillaceous. The principal river, next to the boundary one of the Wye, is the Uske, which, taking its rise from the black mountain, in the western side of the county, on the border of Caermarthenshire, flows across it through a fine valley to the south eastern angle, passing the town of Brecon. A little to the east of the town of Brecon is a considerable lake, well stored with fish, out of which a rivulet runs to the Wye. The Brecon Canal unites with the Monmouth Canal eight miles and a half from Newport and one mile from Pontypool; it crosses the river Avon, is carried through a tunnel 220 yards in length, passes the town of Abergavenny towards the river Uske, and proceeds parallel with that river to Brecon, being thirty-three miles in length, with sixty-eight feet rise to Brecon. By the fall of this canal from Brecon to the Bristol channel, it appears that Brecon is 411 feet eight inches above the level of the sea.

The agriculture of this county is superior to that of most of the other counties of Wales, and appears to have begun to improve about the middle of the last century, as the Breconshire Agricultural Society was instituted in 1775, being one of the first associations of the kind in the island. The mode of culture in the good soils is conducted in the best manner; but where the land is naturally poor, the tillage is very bad. In the Vale of Uske, the Norfolk rotation is followed with skill and success; and tolerably abundant crops of barley, clover, wheat, and turnips are obtained. The Highland farmers, in general, are too poor to attempt any material improvements. In the vales the farms seldom exceed 150 or 200 acres; the rents are high—in the neighbourhood of Glazbury and Hay nearly forty shillings the cyfair, which is about one third less than the statute acre; the poorest grounds do not let for more than four or five shillings the cyfair.

The principal exports of the county are wool, butter, and cheese. Of the first, a considerable quantity is spun and knit into stockings in the hundred of Biulth, and in different parts of the Highlands; the stockings are bought by hosiers and carried to the English market. Some sheep, a few horned cattle, and a considerable number of swine, are frequently driven to Worcester, London, Bristol, &c. The cattle and horses are small, but the former have been much improved by intermixing the Glamorganshire and Herefordshire breeds; and the latter by the introduction of the Suffolk Punch sort. A considerable number of otters frequent the rivers, the furs of which form another branch of the exports of this county.

The manufactures which formerly existed in this county consisted of flannel, linsey-woolsey, and a coarse kind of cloth worn by the labourers; but of late these have become nearly extinct. The mines of iron and coal have, however, been very much extended; and many forges and founderies have been constructed, which give employment to a considerable part of the population in that part of the county which is contiguous to Monmouthshire.

The county confers the title of Earl on the Marquis of

Breda
||
Greenberg.

Camden. It returns to parliament one member for the county and one for the town of Brecon. It is comprehended in the bishopric of Landaff, and, by a late law, in the Oxford new circuit.

At the three decennial enumerations, the population of the county, and the number of houses, appeared thus :

Year.	Males.	Females.	Total.	Houses.
1801.....	15,393.....	16,240.....	31,633.....	6,315
1811.....	18,507.....	19,228.....	37,735.....	7,555
1821.....	21,853.....	21,760.....	43,613.....	8,425
1831.....	23,896.....	23,867.....	47,763	

Of the families in the last of these years, 4049 were employed in agriculture, 3703 in manufactures, trade, or handicrafts, and 1280 were included in neither of these classes.

BREDA, a city, the chief of a circle of the same name, in the province of South Brabant, in the Netherlands. It is well built and strongly fortified, and the country around can be flooded for defence in case of necessity. It is connected with the sea by a navigable canal, which communicates with the mouth of the Maas. It is celebrated for the peace concluded here in 1667. It contains about 1000 houses and 10,500 inhabitants. Long 4. 40. 19. E. Lat. 51. 25. 29. N.

BREDA, *John Van*, an historical and landscape painter, was born at Antwerp in 1683. He was the son of Alexander Van Breda, an artist much esteemed for landscapes, views of particular scenes in Italy, fairs, and markets, with a variety of animals and figures.

BREDSTEDT, a town, the capital of a bailiwick, containing one town and nine parishes, in the duchy of Sleswick and kingdom of Denmark. It stands on the sea-shore, and contains 309 houses, with 1590 inhabitants. Long. 8. 53. E. Lat. 54. 38. N.

BREECHES, a garment worn by males, reaching from the girdle to the knees, and serving to cover the hips, thighs, and knees. The ancient Romans had nothing in their dress answering to our breeches and stockings; instead of which, under their lower tunics and waistcoats, they sometimes bound their thighs and legs round with silken scarfs or fasciæ, which were called *tibialia* and *femoralia*. Breeches appear to be a habit peculiar to the barbarous nations, especially those inhabiting the colder countries of the north; and hence Tacitus calls them *barbarum tegmen*. We find mention made of them among the ancient Getæ, Sarmatæ, Gauls, Germans, and Britons; they also obtained amongst the Medes and Persians, who were of Scythian origin; and they afterwards got footing in Italy, some say as early as the time of Augustus, but without much foundation, since the breeches of that emperor, mentioned by Suetonius, were apparently only swaths tied round his thighs. But however this be, breeches were at last received into Italy, and became so much in fashion, that it was judged necessary, under Arcadius and Honorius, to restrain them by law, and expel the *bracarii* or breeches-makers out of the city, it being thought unworthy of a nation which commanded the world to wear the apparel of barbarians.

BREENBERG, BARTHOLOMEW, a painter, was born in 1620. He is best known by the name of Bartolomeo, an appellation bestowed upon him, for the sake of distinction, by the society of Flemish painters at Rome called Bentvogels. He was born at Utrecht, but in the early part of his life went to Rome. His studies in the art of painting were attended with success, and his pictures were held in much estimation. He particularly excelled in landscapes, which he enriched with historical subjects. The figures and animals which he introduced were very spirited, and drawn in a masterly manner; especially when they were not larger than the size in which he usually painted them.

He died in 1660, at the age of forty. He also etched from his own designs a set of twenty-four Views and Landscapes, ornamented with Ruins.

BREEZE, a shifting wind that blows from sea or land during certain hours in the day or night. It is common in Africa and some parts of the East and West Indies. Breezes differ from *etesia* or trade-winds, inasmuch as the former are diurnal, or have their periods each day, whilst the latter are annual, and blow at a distance from land. The sea-breezes prevail by day and the land-breezes by night, so that they remain as constant as the seasons of the year, or the course of the sun, on which they seem to depend, although they come on sooner or later, stronger or weaker, in some places than in others, and vary according to latitude and other circumstances.

BREGENTZ, the capital of the circle of Voralberg, in the Austrian province of Tyrol, stands on a hill at the south-east end of the lake of Constance. It has three churches, a Dominican monastery, and about 2200 inhabitants, occupied in silk and cotton manufactures, and in making various iron wares.

BREHAR, one of the Scilly Islands, lying almost directly west of the Land's End in Cornwall, about the distance of thirty miles. It is situated between the isles of Micarol, Guel, Trescaw, and Samson, and is the roughest and most mountainous of them all. Not long ago there were only two families on it, but now the number has considerably increased. There are a few miserable houses, called the town of Brehar; and also several barrows edged with stone, in which considerable persons were burned in ancient times; besides many monuments of the Druids. Some are of opinion that this, with the rest, originally made but one island; which is probably the reason why so many antiquities are now found in most of them.

BREHONS, the provincial judges among the ancient Irish, by whom justice was administered and controversies decided. These sages were a distinct tribe or family, to whom competent lands were allowed in inheritance. In criminal cases the brehon had the eleventh part of all the fines; which could not but be considerable at a time when murders, rapes, robberies, and the like offences, were only subject to pecuniary commutations.

BREION-Laws, or *Leges Brehonicae*, denote the general maxims or rules observed by the Brehons, and which had the force of laws throughout all the provinces of Ireland.

BREISACH, a bailiwick in the circle of Treisam, of the duchy of Baden, on the Rhine, containing two cities, twelve villages, and six hamlets, with 13,215 inhabitants. The chief city, of the same name, celebrated for its former strong castle, stands on the Rhine, and has a population of 2711 persons. Long. 7. 28. 30. E. Lat. 48. 1. 48. N.

BREMEN STATE. See GERMANY.

BREMEN, a province of the kingdom of Hanover, which, together with Verden, was secularized at the treaty of Westphalia in favour of Sweden. In a war between Denmark and Sweden in 1712, it was conquered by the former kingdom, who sold it to the house of Hanover, to whom it was, after much negotiation, confirmed by imperial edict in 1732. It is bounded on the north-east by the Elbe, on the north by the German Ocean, on the east by Lüneburg, on the south by the province of Hoya and a part of Brunswick, on the south-west by the republic of Bremen, and on the west by Oldenburg. It extends over about 2696 square miles, or 1,665,440 acres. On the borders of the sea and of the Elbe there is a narrow strip of good marsh and corn land, though the greater part of the interior of the province is a most sterile sandy district; but by the attention which the Duke of Cambridge has devoted to the roads, the interior has been vastly improved within the last twelve years, and the cultivation much extended.

Breeze
||
Bremen.

Brenage The population has also rapidly increased in the same period. In 1816 it amounted to 207,212, and at the end of 1826 to 230,235 individuals. It contains four cities, twenty-three market-towns, 125 parishes, and 924 hamlets. The inhabitants are Lutherans, with the exception of seven churches, which are served by pastors of the reformed confession.

BRENNAGE, **BRENNAGIUM**, in the writers of the middle ages, a kind of tribute paid in lieu of bran, or bran itself, which the tenants were obliged to furnish for the support of the lord's hounds. The word is also written *brénage*, *brénagium*, and *brénaige*, *brénagium*, *brénaticum*, and *brénaticum*.

BRENNUS, a celebrated captain among the Gauls, who, about 388 years before the Christian era, entered Italy with a powerful army, made great conquests there, defeated the Romans, and sacked Rome. The Capitol alone was defended; and Camillus coming to its relief, drove the Gauls not only out of Rome, but also out of Italy.

BRENTFORD, a town, being a hamlet in part of the parish of Hamwell and hundred of Ossulton, in the county of Middlesex, seven miles from London, on the banks of the Thames. It consists of a single long street, and comprehends two parishes, with their respective churches. It is remarkable as the place where elections for the county are held, and as the greatest thoroughfare for carriages of any in England, though the street is narrow, and impediments often present themselves to obstruct the road. Near it is the magnificent palace of the Duke of Northumberland, Sion-House; and on the opposite bank of the Thames the royal palace of Kew, with its magnificent botanical garden. There is a well-supplied market on the Tuesdays.

BREREWOOD, **EDWARD**, an English mathematician and antiquary, was the son of Robert Brerewood, a tradesman, who was thrice mayor of Chester, and born in that city in the year 1565. He received the rudiments of his education at the free school in Chester; and was afterwards admitted, in 1581, of Brazen-nose College in Oxford. In the year 1596 he became the first professor of astronomy in Gresham College, London; and there led the same private and retired course of life as he had before done in Oxford. He died of a fever upon the 4th of November 1613. He was a great searcher into antiquity and curious knowledge, but never published any thing during his lifetime. After his death came out the following works: —1. *De Ponderibus et Pretiis veterum Nummorum eorumque cum recentioribus Collatione*, 1664, 4to; 2. *Inquiries touching the Diversities of Languages and Religion through the chief parts of the world*, London, 1614, 4to; 3. *Elementa Logice in gratiam studiosæ juventutis in Academia Oxon.* London, 1614, 8vo, and Oxford, 1628, 8vo; 4. *Tractatus quidam Logici de prædicabilibus et prædicamentis*, 1628, 8vo; 5. *Two Treatises on the Sabbath*, 1630 and 1632; 6. *Tractatus duo, quorum primus est de Meteoris, secundus de Oculo*, 1631; 7. *Commentarii in Ethicam Aristotelis*, Oxford, 1640, 4to; and, 8. *The Patriarchal Government of the Ancient Church*, Oxford, 1641, 4to.

BRESCIA, one of the delegations into which the Austrian kingdom of Venetian Lombardy is divided. It is bounded on the north-west by Bergamo, on the north-east by the Tyrol, on the east by the Lake of Guarda, on the south-east by Mantua, on the south by Cremona, and on the south-west by Lodi. Its extent is 1115 square miles, or 713,600 acres. It is divided into twelve districts, and these into 238 communes or parishes; and it comprehends one city, thirty-two market-towns, and 202 villages, containing 50,840 houses. The inhabitants, in 1816, amounted to 311,596, of whom 157,572 were males, and 154,024, females; but since that period they have rapidly increased.

The northern part, or one third of the delegation, consists of a chain of mountains, which belong to the Rhetian Alps; the remainder is part of the great plain of Lombardy. The latter division is highly productive in corn and in mulberry trees, as well as in flax, hemp, and oil. The wine is considered as good, but not sufficient for the domestic consumption. The mountainous parts afford iron, lead, copper, marble, granite, and charcoal. The manufactures consist principally of silk, but are considerable in woollen, linen, and cotton goods, and in iron, steel, glass, and paper wares. The capital, of the same name, is situated on the river Garza, at the foot of a hill, on the summit of which is a picturesque ancient castle. It contains, besides the cathedral, twelve parish and several conventual churches, six hospitals, six orphan-houses, and some other public buildings. The inhabitants amounted in 1817 to 34,168, but are stated to have increased to upwards of 40,000 in 1824. It is the chief seat of those fabrics the raw materials of which are so amply furnished by the province. Long. 10. 8. 4. E. Lat. 45. 32. 30. N.

BRESLAU, one of the governments into which the kingdom of Prussia is divided. It extends over the north-west part of the province of Silesia, or what was formerly Lower Silesia. It is bounded on the north and north-east by Posen, on the east by Poland, on the south-east by Oppeln, on the south-west by Reichenbach, and on the west by Liegnitz. Its extent is 5269 square miles, or 3,373,160 acres. The population amounted in 1817 to 792,071, at the end of 1819 to 833,253, and at the end of 1826 to 914,607. It is divided into twenty-two circles, which, in 1826, contained 121,080 houses, in thirty-five cities, seven market-towns, and 1283 villages. About two thirds of the inhabitants are of the Protestant profession, about one third Catholics, and betwixt 7000 and 8000 Jews. The live stock of the whole district consisted of 72,657 horses, 293,203 cows, and 894,460 sheep of all ages and both sexes. It forms the most important part of the province of Silesia, the greatest manufacturing country of the east of Europe. The city of Breslau is the capital as well of the government of that name as of the whole province of Silesia, and is the third of the royal residences. It is situated at the confluence of the Ohlau and the Oder, about 500 feet above the level of the Baltic Sea. It is the seat of the civil and military government of Silesia. A university, re-established in 1811, has a valuable library of 100,000 volumes, and in 1826 had 850 students, consisting of both Catholics and Protestants. It is an ancient city, exhibiting many specimens of the oldest German architecture. Many manufactures, particularly of linen and cloth, have long flourished there, though said to be now somewhat on the decline. At the great fair extensive transactions are carried on in fine wool. It contained, in 1826, 78,600 inhabitants, of whom 4600 were Jews. Long. 16. 56. 47. E. Lat. 51. 6. 50. N.

BRESSUIRE, an arrondissement in the department of the Two Sèvres, in France, extending over 650 square miles, and comprehending six cantons and ninety-one communes, with 68,400 inhabitants. The chief place is a market-town of the same name on the river Argenton. It was totally destroyed during the wars in La Vendée, but is beginning to recover from the losses of that period.

BREST, an arrondissement in the department of Finistère, in France, extending over 127 square miles, comprehending twelve cantons and eighty-five communes, with 136,149 inhabitants. It takes its denomination from the city of Brest, the most perfect and strongest naval station in the kingdom. The harbour consists of the road of Brest, with two deep indentations forming bays, into one of which the river Landeneau, and into the other the river Aulne, pour their streams. There is but one narrow en-

Breslau
Brest.

Bret
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Brethren.

trance, defended by strong forts on both sides, and the interior is also protected by formidable batteries. The water is sufficiently deep for the largest ships, and there is space enough for 500 sail to ride securely. The docks, store-houses, and other appendages to the arsenal, are well adapted for the purpose intended. Brest was but a fishing village till 1631, since which it has risen to be an extensive and populous city, and contains at present 2600 houses, with 25,865 inhabitants. It is furnished with a medical school for the navy, an academy for the study of navigation, an observatory, a botanical garden, and a good library. Long. 4. 13. 20. W. Lat. 48. 22. 42. N.

BRET, a name which the people on the coast of Lincolnshire give to the common turbot, a fish extremely plentiful there, and taken in vast abundance. The way of catching them is in a net trailed on the ground by two horses, the one going up to the middle of his body in water, the other on shore.

BRETHREN AND SISTERS OF THE FREE SPIRIT, in *Ecclesiastical History*, an appellation assumed by a sect which sprung up towards the close of the thirteenth century, and gained many adherents in Italy, France, and Germany. They took their denomination from the words of St Paul, in his epistle to the Romans, chap. viii. ver. 2, 14, and maintained that the true children of God were invested with the privilege of a full and perfect freedom from the jurisdiction of the law. Some of their professed principles resembled those of the Pantheists, and they held that all things flowed by emanation from God; that rational souls were portions of the Deity; that the universe was God; that, by the power of contemplation, they were united to the Deity, and thereby acquired a glorious and sublime liberty, both from the sinful lusts and the common instincts of nature; and that the person who was thus absorbed in the abyss of the Deity, became a part of the Godhead, and was the son of God in the same sense and manner as Christ was, being freed from the obligation of all laws human and divine. Many edicts were published against this sect; but, notwithstanding the severities which they suffered, they continued till about the middle of the fifteenth century. They were called by several other names, such as Schwestriones, Picards, Adamites, and Turlupins.

BRETHREN and Clerks of the Common Life, a denomination assumed by a religious fraternity towards the latter end of the fifteenth century. They lived under the rule of St Augustin, and were eminently useful in promoting the cause of religion and learning. Their society was formed in the preceding century, by Gerard de Groot, a native of Deventer; but it did not flourish till about the period above mentioned, when it obtained the approbation of the council of Constance, and became very respectable in Holland, Lower Germany, and the adjacent provinces. It was divided into two classes; the *lettered brethren* or clerks, and the *illiterate*. They lived in separate habitations, but maintained the closest fraternal union. The former applied to the study of polite literature, and the education of youth; whilst the latter were employed in manual labour and the mechanic arts. They were frequently called Beghards and Lollards, by way of reproach.

White BRETHREN, Fratres Albati, were the followers of a leader about the beginning of the fifteenth century, who arrayed himself in a white garment; and as they also clothed themselves in white linen, they were distinguished by this title. Their leader was a priest from the Alps, who carried about a cross, like a standard, and whose apparent sanctity and devotion drew together a number of followers. This deluded enthusiast practised many acts of mortification and penance; endeavouring to persuade the European nations to renew the holy war, and pretend-

ing that he was favoured with divine visions. Boniface IX. ordered him to be apprehended and committed to the flames, upon which his followers dispersed.

BRETON, or CAPE BRETON, an island near the eastern side of the continent of North America, situated between forty-five and forty-seven degrees of north latitude. It is separated from Nova Scotia by a narrow strait called Canso, and is about a hundred miles in length by fifty in breadth. It is surrounded with little sharp-pointed rocks, separated from each other by the waves, above which some of their tops are visible. All its harbours are open to the south-east. On the other parts of the coast there are but few anchoring places for small vessels. Except in the hilly portions, the surface of the country has but little solidity, being everywhere covered with a light moss, and with water. The dampness of the soil is exhaled in fogs, without rendering the air unwholesome; but the climate is very cold, owing either to the number of the lakes, which cover more than half the island and remain frozen for a considerable period of the year, or to the extent of the forests, and the fogs that totally intercept the rays of the sun.

Though some fishermen had long resorted to this island every summer, not more than twenty or thirty ever settled there. The French, who took possession of it in August 1713, were properly the first inhabitants. They changed its name to that of Isle Royale, and fixed upon Fort Dauphin as their principal settlement. This harbour was two leagues in circumference, and might have been rendered impregnable at a trifling expense; but the difficulty of approaching it occasioned it to be abandoned, after great labour had been bestowed upon the undertaking. The settlers then turned their views to Louisbourg, the access to which was easier; and convenience was thus preferred to security. The fortification of Louisbourg, however, was not begun till the year 1720.

In the year 1714 some fishermen, who till then had lived in Newfoundland, settled in this island. It was expected that their number would soon have been increased; but these hopes were disappointed. Some distressed adventurers from Europe, however, came over from time to time to Cape Breton, and the number of inhabitants gradually increased to four thousand. They were settled at Louisbourg, Fort Dauphin, Port Toulouse, Nerucka, and on all the coasts where a proper beach was to be found for drying cod. The inhabitants never applied themselves to agriculture, the soil being wholly unfit for it. They frequently sowed corn, but it seldom came to maturity; and when it did thrive so as to be worth reaping, it degenerated so much that it was unfit for seed next harvest. In a word, the soil of Cape Breton seemed calculated to invite none but fishermen and soldiers.

Though the island was entirely covered with forests before it was inhabited, its woods scarcely ever became an object of trade. The peltry trade was a very inconsiderable object. It consisted only of the skins of a few lynxes, elks, musk-rats, wild cats, bears, otters, and foxes of a red and silver-gray colour. Some of these were procured from a colony of Mickmac Indians who had settled on the island with the French, and never could raise more than sixty men able to bear arms. The rest came from St John's, or the neighbouring continent. Greater advantages might possibly have been derived from the coal-mines, which abound in the island. The strata lie in a horizontal direction; and being only about eight feet below the surface, they may consequently be worked without digging deep or draining off the waters. But notwithstanding the prodigious demand for coal from New England between the year 1745 and 1749, these mines would probably have been forsaken, had not the ships which were sent out to the French islands wanted ballast.

Brev. The people of Cape Breton did not send all their fish to Europe. Part was exported to the French southern islands, on board twenty or twenty-five ships of from seventy to a hundred and forty tons burden. Besides the cod, which formed at least half their cargoes, they exported to the other colonies timber, planks, thin oak-boards, salted salmon, and mackerel, train-oil, and sea-coal, which were paid for in sugar and coffee, but chiefly in rum and molasses. The island, however, could not consume all these commodities, and as Canada took but a small part of the overplus, it was chiefly bought by the people of New England, who gave in exchange fruits, vegetables, wood, brick, and cattle.

This island, which may be considered as the key of Canada, was attacked by the English in 1745. The plan of the invasion was laid at Boston, and New England bore the expense of it. A merchant named Pepperel, who had excited, encouraged, and directed the enterprise, was intrusted with the command of an army of 6000 men, which had been levied for the expedition; and these forces, conveyed by a squadron from Jamaica, brought the first news to Cape Breton of the danger that threatened it. But although the advantage of a surprise would have secured the landing without opposition, and the invaders had to encounter but 600 regular troops and 800 inhabitants hastily armed, still the success of the undertaking was precarious. Little could be expected from a militia suddenly assembled, who had never seen an enemy, and who were to act under the direction of sea-officers only. But an incident, fortunate for the invaders, neutralized even this insufficient force.

The construction and repairs of the fortifications of Louisbourg had always been left to the care of the garrison, and the soldiers were anxious to be employed in these works. But when they found that those who should have paid them appropriated to themselves the profit of their labours, and when the justice they demanded was denied them, they determined to assert their rights, and their indignation rose to such a height that they despised all authority. They had in fact been in open rebellion for six months, when the British appeared before the place. This apparition, however, did not produce the union which was so necessary for the common defence. The soldiers indeed made advances; but their commanders, mistrusting a generosity of which they themselves were incapable, kept their men in a manner prisoners, till an ill-managed defence had reduced them to the necessity of capitulating. The whole island shared the fate of Louisbourg, its only bulwark.

This valuable possession, restored to France by the treaty of Aix-la-Chapelle, was again attacked by the British in 1758. On the 2d of June, a fleet of twenty-three ships of the line and eighteen frigates, having on board 16,000 troops, anchored in Gabarus Bay, within half a league of Louisbourg. It had been attempted to render the landing impracticable near the town; and in the prudent precautions which had been taken, the besiegers saw the dangers and difficulties they had to expect; but, far from being deterred by these, they had recourse to stratagem, and, extending their line so as to threaten the whole coast, they landed by force of arms at Cormorant Creek. This place was naturally weak. The French had fortified it with a good parapet planted with cannon, behind which they had posted 2000 soldiers and some Indians, while in front they had constructed with felled trees an impenetrable abbattis.

But these and other precautions that had been taken were rendered abortive by the impetuosity of the French. The English had scarce begun to move towards the shore, when their enemies exposed the snare they had laid for

them. By opening a brisk but hasty fire on the boats, and still more by prematurely removing the boughs that masked the forces, the English, apprised of their danger, immediately turned back, and the benefit of these preparations was entirely lost. The situation of the English, however, was still sufficiently critical, especially as they saw no other place to effect a landing on except a rock, which had always been deemed inaccessible. But General Wolfe, while occupied in reembarking his troops, and sending off the boats, ordered Major Scott to repair thither; and that officer immediately proceeded towards the spot with his men. The Major's own boat approached first, but sinking at the very instant he stepped ashore, he climbed up the rock alone, in hopes of meeting with a hundred of his men who had been sent to attempt a landing at another point. Instead of this number, he found only ten; but with these few he gained the summit of the rock, where ten Indians and sixty Frenchmen killed two of them and mortally wounded three. But notwithstanding this loss he stood his ground under cover of a thicket, till the troops, regardless alike of the raging surf and the fire of the cannon, came up to him and put him in full possession of that important post, the only one that could secure the landing. The French, as soon as they saw that the enemy had got a firm footing on land, betook themselves to the only remaining refuge, and shut themselves up in Louisbourg. But the fortifications were in a bad condition; the revêtements of the several curtains had entirely crumbled away; there was but one casemate and a small magazine that were bomb-proof; and the garrison consisted only of 2900 men. Notwithstanding these disadvantages, however, the besieged made an obstinate resistance; and it was only on the eve of an assault, which it was impossible to sustain, that they talked of surrendering. An honourable capitulation was granted them, and the possession was confirmed to Great Britain by the peace in 1763, after which the fortifications were blown up, and the town of Louisbourg dismantled.

BREVET, in the French customs, denotes the grant of some favour or donation from the king.

BREVET more particularly denotes that species of military commission by which an officer is promoted to a rank in the army above that which he holds in his regiment. Brevet rank, therefore, is a rank in the army higher than that for which pay is received, and, when corps are brigaded, it gives precedence according to the date of the brevet commission. The term *brevet* is also sometimes used to express general promotion, by which a given number of officers are raised from the rank of captain upwards, without any additional pay.

BREUGHEL, JOHN, was born about the year 1575. He first applied himself to painting flowers and fruit, in which he excelled; and he afterwards obtained much success in drawing landscapes and views of the sea. He lived long at Cologne, where he acquired considerable reputation, and then travelled into Italy, where his fame went before him, and where his landscapes, adorned with small figures, gave very great satisfaction. If a judgment may be formed from the number of pictures he left behind him, he must have been exceedingly industrious; nor was he satisfied with embellishing his own works, but rendered himself useful in this respect to his friends. Even Rubens made use of Breughel's hand in the landscape part of several of his small pictures; such as his *Vertumnus* and *Pomona*, the satyr viewing the sleeping nymph, and the terrestrial paradise, which is looked upon as the masterpiece of that great artist. Breughel died in 1642.

BREVIARY, a daily office or book of divine service in the Roman church. It is composed of matins, lauds, vespers, and the compline or *post communio*.

The breviary of Rome is general, and may be used in

Brevet
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Breviary.

Breviary all places; but on the model of this various others have been formed, appropriated to each diocese, and each order of religious persons.

The breviary of the Greeks is the same in almost all churches and monasteries which follow the Greek rites; and they divide the psalter into twenty parts. In general, the Greek breviary consists of two parts; the one containing the office for the evening; the other that of the morning, divided into matins, lauds, first, third, sixth, and ninth vespers, and the compline, that is, of seven different hours, on account of the saying of David, *Septies in die laudem dixi tibi*.

The institution of the breviary is not very ancient, and there have been inserted in it the lives of the saints, full of stories more remarkable for their strangeness than their authenticity. This gave occasion to several reformations by different councils, especially those of Trent and Cologne; by several popes, particularly Pius V. Clement VIII. and Urban VIII.; and also by several cardinals and bishops, each lopping off some extravagance, and bringing it nearer to the simplicity of the primitive offices. Originally, all were obliged to recite the breviary every day; but by degrees the obligation was restricted to the clergy only, who are enjoined, under penalty of mortal sin and ecclesiastical censures, to recite it at home when they cannot attend in public. In the fourteenth century a particular reservation was granted in favour of bishops, who were allowed, on extraordinary occasions, to pass three days without rehearsing the breviary.

This office was originally called *cursus*, and afterwards *breviarium*, which imports that the old office was abridged, or rather, that this collection is a kind of abridgment of all the prayers. The breviaries now in use are innumerable;

able; the difference between them consists principally in the number and order of the psalms, hymns, paternosters, ave-Marias, creeds, magnificates, cantemuses, benedictuses, canticamuses, nunc dimittises, misereres, hallelujahs, gloria-patris, and so on.

BREVIARY, in *Roman Antiquity*, a book first introduced by Augustus, containing an account of the application of the public money.

BREVIATOR, an officer under the eastern empire, whose business it was to write and translate briefs. At Rome those are styled *breviators*, or *abbreviators*, who dictate and draw up the pope's briefs.

BREWER, ANTHONY, a dramatic poet, who flourished in the reign of King Charles I., and appears to have been held in considerable estimation by the wits of that time, as may be gathered from a compliment paid to him in a poem called *Steps to Parnassus*, in which he is supposed to have a magic power to call the muses to his assistance, and is even set on an equality with Shakspeare himself. There are, however, great disputes among the several writers as to the number of his works. Those which have been ascribed to him with any certainty are, 1. The Country Girl, a comedy; 2. The Love-sick King, a comedy; and, 3. *Lingua*. When this play was performed at Cambridge, it is said by Winstanley that Oliver Cromwell, then a youth, acted a part in it. The substance of the piece is a contention among the Senses for a crown, which *Lingua* had laid for them to find. The part allotted to young Cromwell was that of Tactus or Touch.

BREWER, a person who professes the art of brewing. There are companies of brewers in most capital cities; that of London was incorporated in 1427 by Henry VI.

BREWING.

WE shall divide this article into five chapters. In the first we shall take as short a view as possible of the history of the art; in the second, we shall give an account of the different kinds of grain employed in brewing; in the third, we shall treat of the process of malting; in the fourth, of that of brewing; and in the fifth, we shall give an account of the nature and properties of the different kinds of ale and beer manufactured by the brewer. The *Explanation of the Plates* will contain a description of the vessels used in a London porter brewery.

CHAP. I.

HISTORY OF BREWING.

No notice is taken of beer or ale in the books of Moses, from which it is probable that they were unknown till after the death of this legislator. All the ancient Greek writers agree in assigning the honour of the discovery of beer to the Egyptians, whose country, being annually inundated by the Nile, was not adapted to the cultivation of vines. Herodotus, who wrote about 450 years before the commencement of the Christian era, informs us that the Egyptians made their wine from barley, because they had no vines. *Οἶνον δ' ἐκ κριθῶν πεποιημένον διαχρῆνται οὐ γὰρ σῆν εἶσι ἐν τῇ χώρῃ αὐπῆλοι.* Herodoti, lib. ii. c. 78. Pliny says that this liquid in Ægypt was called *zythum* (Plinii *Hist. Nat.* lib. xxii. c. 25). The same name was given to it by the inhabitants of Galatia, who, according to Diodorus Siculus, were unable to cultivate grapes on account of the coldness of their climate. Beer was distinguished among the Greeks by a variety of names. It was called *οἶνον κριθίνον* (barley wine) from its vinous properties, and from the material employed in its formation. In Sophocles,

and probably in other Greek writers, it is distinguished by the name of *βρυτον*. Dioscorides describes two kinds of beer, to one of which he gives the name of *ζυθον*, and to the other *κωρημι*; but he gives us no description of either sufficient to enable us to distinguish them from each other. (Dioscorides, lib. ii. c. 79 and 80.) Both, he informs us, were made from barley, and similar liquids were manufactured in Spain and Britain from wheat.

Tacitus informs us, that, in his time, beer was the common drink of the Germans; and from his imperfect description of the process which they followed, it is not unlikely, or rather there can be no doubt, that they were acquainted with the method of converting barley into malt. "Potui humor ex hordeo aut frumento in quadam similitudinem vini corruptus." (*De Moribus German.* c. 23.) Pliny gives us some details respecting beer, though they are by no means satisfactory. He distinguishes it by the name of *cerevisia* or *cervisia*, the appellation by which it is always known in modern Latin books.

This liquid does not appear to have come into general use in Greece or Italy; but in Germany and Britain, and some other countries, it appears to have been the common drink of the inhabitants, at least as early as the time of Tacitus, and probably long before. It has continued in these countries ever since, and great quantities of beer are still manufactured in Germany, in the Low Countries, and in Britain.

The first treatise published on the subject, as far as we know, was by Basil Valentine. This treatise, according to Boerhaave, for we ourselves have never had an opportunity of seeing it, is both accurate and elegant. In the year 1585, Thaddeus Hagecius ab Hayck, a Bohemian writer, published a treatise entitled *De Cervisia*

ejusque conficiendi ratione, natura, viribus et facultatibus. This little treatise, consisting only of fifty pages, is written with great simplicity and perspicuity, and gives as accurate a description of the whole process of brewing as any treatise on the subject which we have seen. In the early part of the eighteenth century, Mr Combrune, who, we believe, was a practical London brewer, published a book entitled *The Theory and Practice of Brewing*. This book has gone through many editions, and, we believe, is still reckoned the standard book on the subject. But the attempts made in it to give a rational theory of brewing are far from being satisfactory. Nor can any stress be laid upon the experiments which it contains on the colour of malt, according to the temperature at which it is dried. The fact is, that malt may be rendered brown, or even black, by exposure to a very low heat; while it may be exposed to a very considerable temperature without losing its colour. The writer of this article has seen malt exposed on the kiln to a heat of 175° without losing its colour, or without being deprived of the power of vegetating when put into the ground; and he has reason to believe that these properties would have remained unaltered had the temperature been raised still higher. It is not the degree of heat applied, but the rapidity with which it is raised, that darkens the colour of malt. If the heat at first does not exceed 100°, and if, after the malt is dried as much as it can be at that temperature, the heat be raised to 120°, kept some time at that temperature, and then raised gradually higher, and if we continue to proceed in this manner, the temperature of the kiln may be elevated at least to 175° without in the least discolouring the malt.

In the year 1784 Mr Richardson of Hull published his *Theoretic Hints on Brewing Malt Liquors*, and his *Statistical Estimates of the Materials of Brewing, showing the Use of the Saccharometer*. These books are reprehensible, on account of the air of mystery in which the subject is invested, and the avowal of the author, that he conceals certain parts of the processes. If a brewer conceives he knows more of his art than his neighbours, and chooses to keep his knowledge to himself, there is nothing to be said; but if he publish a book upon the subject, and yet persists in his concealment, he deserves no quarter. His book, in such a case, can be looked upon in no other light than as a quack bill to advertise the goodness of his wares. Mr Richardson, however, deserves considerable praise for the *saccharometer*, which he appears to have been the first to bring under the notice of the brewer. This instrument is of material service, by making brewers acquainted with the strength of their worts, and consequently with the proportion of soluble matter which is furnished by the materials that they employ. Mr Richardson's *saccharometer*, indeed, was not accurate, because it was founded on an erroneous principle. The method which he followed was to determine the weight of a barrel of pure water. The liquid being then converted into wort, a barrel of it was weighed again, and the increase of weight was considered as the matter which the water held in solution. Mr Richardson did not seem to be aware that, when water dissolves the sweet portion of malt, its bulk is altered; and that, for this reason, the specific gravity of it does not indicate the quantity of solid matter which it holds in solution. A set of experiments made on purpose, by dissolving determinate weights of the solid extract of malt in given quantities of water, is necessary to determine the point. The same objection applies to the *saccharometer* of Dring and Fage, and to various others in common use. That of Dica's is nearly correct, having been constructed upon proper principles. But perhaps the best is one constructed about twenty-five years ago by Dr Thomson, and used by the excise officers in Scotland. It indicates the specific gra-

vity of the wort; from which, by means of a sliding rule, which accompanies the instrument, the weight of saccharine matter contained in it is at once determined.

One of the latest books on the subject which we have seen is entitled *Practical Treatise on Brewing and Distilling*. This book was published in quarto in the year 1805. The author, whose name is Shannon, appears to have had some practical knowledge of brewing; but he must have been extremely illiterate, as he was totally unable to write either grammar or common sense. The book is a tissue of absurdities from beginning to end; and the impracticability of his proposed improvements is surpassed only by the absurdity of his theory, which consists of scraps and sentences, taken out of chemical books, and tacked together, so as to have no meaning whatever.

CHAP. II.

OF THE KIND OF GRAIN USED BY BREWERS.

Every kind of grain, with perhaps hardly an exception, may be employed for the purposes of the brewer. In America it is not uncommon to make beer with the seeds of Indian corn or *zea mais*. In order to convert it into malt, it is found necessary to bury it for some time under the ground; and when germination has made sufficient progress, it is dug up and kiln-dried. (See *Philosophical Transactions*, vol. xii. p. 1065.) Mr Mungo Park informs us, that, in Africa, the negroes make beer from the seeds of the *Holcus spicatus*, and the process employed, as he describes it, seems to differ but little from the one followed in this country. (See *Park's Travels*, p. 63, 8vo edition. Dioscorides assures us, that in Spain and Britain wheat was employed for the manufacture of beer; and the writer of this article has been informed by a gentleman in the service of the East India Company, that he has made beer from wheat at Madras. We have ourselves seen oats employed for this purpose in Great Britain; and in Germany and the north of Europe we believe that it is not uncommon to employ rye for the same purpose. But the material which answers best, and which is almost solely used in Great Britain, and we believe in every part of Europe where beer is manufactured, is barley.

Barley is the seed of the *Hordeum vulgare*, a plant species of which has been cultivated from time immemorial, chiefly barley. for the manufacture of beer. There are two species of *hordeum* under cultivation in Britain. The first is, the *Hordeum vulgare*, or barley in which the seeds are disposed in two rows on the spike. This is the species usually cultivated in England and in the southern parts of Scotland. The second is the *Hordeum hexastichon*, called in the south of Scotland *bear*, and in Aberdeenshire *big*. In this species, the grains are disposed in two rows, as in the other; but three seeds spring from the same point, so that the head of *big* appears to have the seeds disposed in six rows. *Big* is a much more hardy plant than barley, and ripens more rapidly. Hence it thrives better than barley in cold and high situations. On this account it is sown in preference in the Highlands and northern parts of Scotland, where the climate is colder than farther to the south. We have been assured that there is a third species of *hordeum* cultivated in Scotland, in which the seeds in the spike are arranged in four rows. To this the term *bear* is exclusively confined by some. We have not ourselves had an opportunity of seeing this species, nor do we find it noticed by botanists. The trivial name *tetrastichon* might be applied to it.

The grains of barley are much larger than those of *big*, and the cuticle which covers them is thinner. Indeed the thickness of the skin of barley itself varies according

Brewing. to the heat of the climate in which it is cultivated, being always the thinner the warmer the climate. Thus it will be found that the cuticle of Norfolk barley is thinner than that of Berwickshire or East Lothian barley; and if Norfolk barley be sown in Scotland for several successive years, its cuticle will be found to become thicker.

Its specific gravity. The specific gravity of barley is rather greater than that of big. The specific gravity of barley, tried in more than 100 different specimens, was found by us to vary from 1.333 to 1.250, and that of big from 1.265 to 1.227. The average weight of a Winchester bushel of barley was found to be 50.7 lbs. avoirdupois, and the average weight of a bushel of big 46.383 lbs. The heaviest barley tried weighed 52.265 lbs. per bushel, and the heaviest big weighed 48.586 lbs. The big grew in Perthshire, and the season was peculiarly favourable. It was not absolutely free from a mixture of barley, as was ascertained by sowing a quantity of it, but the proportion of barley was very small. The average weight of a grain of barley is 0.6688 grain, or very nearly two-thirds of a grain, while the average weight of a grain of big is 0.5613 grain. The average length of a grain of barley, from many thousand measurements, is 0.345 inch, while that of a grain of big is 0.3245 inch. So that the average of both would give us very nearly the third of an inch, which it ought to do, according to the origin of our measures, as commonly stated. The average breadth of a grain of barley is 0.145 inch, while the average breadth of a grain of big is 0.136 inch. The average thickness of a grain of barley is 0.1125 inch, while the average thickness of a grain of big is 0.1055 inch. Thus we perceive that the grain of big is smaller than the grain of barley in all its dimensions.

Weight of the husk. To determine the relative weight of the skins of barley and big, we made choice of three parcels of grain, all excellent in their kinds, namely, Norfolk barley, Haddington barley, and Lanark big. The weights of the whole grain, and of the cuticles of each of these, were as follows:

	Weight of a corn in grains.	Weight of cuticle in grains.
Norfolk barley.....	0.6809.....	0.110 or $\frac{1}{9}$
Haddington barley.....	0.7120.....	0.123 or $\frac{1}{8}$
Lanark big.....	0.5408.....	0.125 or $\frac{1}{8}$

From this we see that there is little difference between the weight of the skin of Norfolk and Haddington barley, but a very considerable difference between Haddington barley and Lanark big. Hence it would seem that this difference is not owing to the climate in which the barley vegetates, but rather to the nature of the two species.

Bulk. The bulks of these two species of grain with relation to each other are as follows:

Barley.....	0.00217 cubic inch.
Big.....	0.001777 cubic inch.

These quantities represent the average bulk of a corn of each kind. Thus it appears that a grain of barley is rather more than $\frac{1}{4}$ th part larger than a grain of big.

Finally, from a comparison of many thousand corns of each species with each other, it appears that the inequality between the size of different grains of big is greater than that between different grains of barley. Indeed, if we

examine an ear of big when nearly ripe, we shall perceive that the corns towards the bottom of the ear are smaller than those towards the summit and about the middle of the ear. Several of these bottom grains are usually abortive, or consist only of skin; but this is not always the case. In an ear of barley, on the contrary, we shall find almost all the grains nearly of a size, though in some cases the grain constituting the upper termination of the spike is rather smaller than the rest.

These circumstances may strike the reader as too minute and trifling to be stated in such detail; but we shall find afterwards that they will furnish us with an explanation of some anomalous circumstances which occur when these two species of *hordeum* are converted into malt. The value of barley, or its produce in alcohol, is rather improved, while big, on the contrary, is deteriorated, by malt-ing it, at least twenty per cent.

The constituents of the kernel of barley and big, as far as we are able to ascertain at present, are the same. Barley has been subjected to an elaborate chemical analysis by Einhoff, who obtained from 3840 parts of barley-corns the following constituents:

Volatile matter.....	430
Husk or cuticle.....	720
Meal.....	2690

3840

From the same quantity of barley-meal he obtained,	
Volatile matter.....	360
Albumen.....	44
Saccharine matter.....	200
Mucilage.....	176
Phosphate of lime with mucilage.....	9
Gluten.....	135
Husk, with some gluten and starch.....	260
Starch, not quite free from gluten.....	2580
Loss.....	76

3840

The writer of this article has likewise extracted from barley, by means of alcohol, a small quantity of an oily matter, which has an asparagus green colour, and does not burn with the same readiness as an oil. It has very much the appearance of olive oil coagulated, but its consistence is less, and its colour is darker. It has little smell, and its taste resembles the flavour of spirits from raw grain. We have likewise found in big a quantity of nitrate of soda. Hence it is likely that this salt exists as a common constituent of barley. We obtained it by steeping big in water for two days, concentrating the liquid, and setting it aside in a dry place. Many rhomboidal crystals of nitrate of soda gradually make their appearance as the liquid evaporates.

We shall terminate this chapter by a table, exhibiting the most remarkable properties of a considerable number of specimens of British barley and big, as determined by the writer of this article. The different specimens are distinguished by the name of the county in which they grew. By the *bushel* in the table is meant the Winchester bushel of 2150.42 cubic inches.

TABLE OF PROPERTIES.

GRAIN.	WEIGHT In lbs. Avoirdupois.		Specific Gravity.	SIZE.		SHAPE.		EQUALITY OF SIZE.												
	Per Bushel.	Per Boll.		Average Weight of a Corn in Grains Troy.	Average Bulk of a Corn in Cubic Inches.	Average Length in Inches.	Average Breadth in Inches.	Average Thickness in Inches.	Weight of a Corn in Grains.		Length in Inches.		Breadth in Inches.		Thickness in Inches.					
1st Norfolk.....	50-375	302-250	1-290	0-681	0-00210	0-346	0-145	0-112	0-6954	0-6647	0-0307	0-387	0-318	0-069	0-166	0-128	0-038	0-125	0-092	0-033
1st Kent.....	49-877	299-262	1-250	0-662	0-00209	0-343	0-142	0-108	0-6775	0-6410	0-0365	0-369	0-287	0-086	0-160	0-116	0-044	0-125	0-087	0-038
1st Suffolk.....	50-683	304-098	0-639	0-639		0-347	0-150													
2d Norfolk.....	50-570	303-420	1-272	0-665	0-00216	0-344	0-145	0-110	0-6960	0-6940	0-0470	0-384	0-300	0-084	0-159	0-126	0-033	0-120	0-096	0-024
2d Kent.....	50-062	300-372	1-290	0-637		0-347	0-143	0-112												
2d Suffolk.....	49-250	295-500	1-307	0-601		0-345	0-140	0-108	0-6740	0-6250	0-0590	0-353	0-301	0-052	0-169	0-132	0-022	0-116	0-100	0-016
2d Norfolk.....	51-937	311-622	1-290	0-648	0-000198	0-345	0-141	0-107	0-6740	0-6250	0-0590	0-362	0-328	0-034	0-159	0-118	0-041	0-121	0-083	0-038
3d Essex.....	47-683	286-098	1-291	0-593		0-333	0-139	0-103	0-6020	0-5830	0-0190	0-369	0-292	0-077	0-155	0-111	0-044	0-125	0-089	0-036
Average.....	50-054	300-327	1-28	0-640	0-00208	0-343	0-143	0-108	0-6689	0-6415	0-0384	0-370	0-304	0-067	0-160	0-121	0-038	0-123	0-092	0-030
1st Haddington.....	52-190	313-140	1-333	0-7120	0-00211	0-336	0-154	0-120	0-7342	0-6954	0-0388	0-368	0-286	0-082	0-171	0-107	0-064	0-131	0-089	0-042
1st Edinburgh.....	52-164	312-984	1-290	0-7056	0-00217	0-335	0-149	0-116	0-7204	0-6906	0-0298	0-369	0-300	0-069	0-162	0-129	0-033	0-127	0-101	0-026
1st Berwick.....	52-062	312-372	1-307	0-6571		0-335	0-143	0-111				0-361	0-290	0-071	0-160	0-124	0-036	0-126	0-087	0-035
1st Linlithgow.....	51-062	306-372	1-324	0-7650	0-00228	0-373	0-150	0-117	0-7020	0-6700	0-0320	0-426	0-328	0-098	0-164	0-130	0-034	0-130	0-094	0-036
2d Haddington.....	52-265	313-590	1-333	0-6900	0-00204	0-346	0-145	0-111	0-7020	0-6700	0-0320	0-380	0-288	0-092	0-170	0-111	0-059	0-132	0-072	0-060
3d Haddington.....	48-987	293-922	1-250	0-6570	0-00208	0-341	0-144	0-108	0-6790	0-6260	0-0530	0-370	0-308	0-062	0-159	0-117	0-042	0-121	0-085	0-036
3d Linlithgow.....	46-375	278-250	1-333	0-7000		0-347	0-139	0-106							0-164	0-120	0-044	0-130	0-089	0-041
Average.....	50-729	304-375	1-310	0-6981	0-00213	0-346	0-146	0-112	0-7089	0-6705	0-0384	0-379	0-300	0-079	0-164	0-119	0-044	0-128	0-088	0-039
Brg.																				
1st Lanark.....	48-560	291-360	1-250	0-541	0-000170	0-328	0-133	0-103	0-5508	0-5341	0-0167	0-378	0-278	0-100	0-152	0-116	0-036	0-118	0-087	0-031
1st Perth.....	48-586	291-516	1-227	0-586	0-000189	0-324	0-136	0-105	0-6142	0-5668	0-0478	0-379	0-274	0-105	0-167	0-108	0-059	0-130	0-086	0-044
1st Dumfries.....	47-500	285-000	1-246	0-560	0-000177	0-322	0-136	0-108	0-5557	0-5268	0-0607	0-370	0-267	0-103	0-160	0-114	0-046	0-122	0-088	0-034
2d Kirkcudbright	47-031	282-186	1-265	0-558	0-000174	0-324	0-139	0-106	0-5720	0-5520	0-0200	0-356	0-280	0-076	0-155	0-110	0-045	0-119	0-087	0-032
Average.....	47-919	287-515	1-247	0-561	0-000177	0-324	0-136	0-105	0-5811	0-5449	0-0363	0-370	0-274	0-096	0-158	0-112	0-046	0-122	0-087	0-035

CHAP. III.

OF MALTING.

It is always customary to convert barley into malt before employing it in the manufacture of ale. Not that this conversion is absolutely necessary, but that it adds considerable facility to the different processes of the brewer. The writer of this article has several times tried the experiment of making ale from unmalted barley, and found it perfectly practicable. Several precautions, however, are necessary in order to succeed. The water let upon the ground barley in the mash-tun must be considerably below the boiling temperature; for barley-meal is much more apt to *set* than malt, that is, to form a stiff paste, from which no wort will separate. The addition of a portion of the chaff of oats serves very much to prevent this *setting of the goods*, and facilitates considerably the separation of the wort. Care must likewise be taken to prevent the heat from escaping during the mashing, and the mashing must be continued longer than usual; for it is during the mashing that the starch of the barley is converted into a saccharine matter. This change seems to be owing merely to the chemical combination of a portion of water with the starch of the barley; just as happens when common starch is converted into sugar, by boiling it with very dilute sulphuric acid, or any other acid. This method of brewing from raw grain answers admirably for small beer. Some years ago it was practised to a considerable extent by several brewers of small beer in Edinburgh, and their beer was considered as greatly preferable to small beer brewed in the usual manner. The practice was stopped by a decision of the Court of Exchequer,—a decision which, in our opinion, proceeded upon arbitrary grounds, and which was at all events detrimental to the public; for surely it is highly impolitic to prevent ameliorations in the manufactures in order to guard against any deficiency in the produce of the taxes. A wise government would have permitted the improvement, and would have levied the malt-tax in a different manner. In our trials the raw barley did not answer so well for making strong ale as for small beer. The ale was perfectly transparent, and we kept it for several years without its running into acidity; but it had a peculiar flavour, by no means agreeable. Probably a little practice might have enabled us to get rid of this flavour, in which case raw grain would answer in every respect as well for brewing as malt does.

A duty was first charged upon malt during the troubles of Charles I.'s reign. But it continued very moderate till the war with France recommenced in 1803. It was then raised to the following sums per bushel:—

	L.	s.	d.	
English malt.....	0	4	4	or 100
Malt of Scotch barley.....	0	3	8½	or 84·856
Malt of Scotch big.....	0	3	0½	or 69·472

But two shillings of this tax were to continue only till the end of the war, and for six months after its conclusion. In consequence of this very heavy tax, several regulations were imposed upon the maltster, with a view to facilitate the levying of the duty, and to prevent him from defrauding the revenue. The most important of these are the two following:—1. The barley must remain in the cistern in which it is steeped with water for a period not less than forty hours. 2. When the malt is spread upon the floor the maltster is not at liberty to sprinkle any water upon it, or to moisten the floor. We shall now describe the process of malting, as it is practised by the best-informed malt-makers in Great Britain.

Malting consists of four processes, which follow each other in regular order; namely, *steeping*, *couching*, *flooring*, and *kiln-drying*.

1. The steep is a square cistern sunk at one end of the malt barn, lined with stone, and of a sufficient size to hold the whole barley that is to be malted at a time. The bar-ley is put into this cistern with the requisite quantity of pure water to cover it. It is laid as evenly as possible upon the floor of the cistern. Here it must remain at least forty hours; but in Scotland, especially when the weather is cold, it is customary to allow it to remain much longer. We have seen barley steeped in Edinburgh for 112 hours by one maltster, and by another usually ninety-eight or ninety-two hours. It is the common practice to introduce the water into the cistern before the barley, and it is usually once drawn off and new water added during the steeping.

Three changes take place on the barley while in the steep. 1. It imbibes moisture and increases in bulk. 2. Some carbonic acid gas is evolved, most of which remains dissolved in the steep-water. 3. A portion of the husk or skin of the barley is dissolved, in consequence of which the steep-water acquires a yellow colour, and contracts a peculiar smell, not unlike that of moist straw.

The quantity of moisture imbibed by the barley varies according to the goodness of the barley and the length of time during which it is allowed to remain in the steep. But the general average may be stated at 0·47; or 100 lbs. of barley, steeped the usual time, weigh, newly taken out of the steep and dried, 147 lbs. English barley acquires more weight than Scotch barley, while Scotch barley acquires greater weight than big. But big cannot safely be steeped for so long a time as barley. The swell of the grain in the steep obviously depends upon the quantity of water absorbed; but it is not so great as that absorption, scarcely ever exceeding one fifth of the original bulk of the barley, while the increase of weight amounts to nearly one half of that of the original weight of the grain. The result of a good many trials by the writer of this article gives the bulk of one hundred measures of different kinds of barley, after steeping, as follows:—

English barley.....	124	measures.
Scotch barley.....	121·1	
Scotch big.....	118	

The greatest swell observed was from 100 to 183, which took place in barley from the county of Suffolk; the smallest was from 100 to 109, which took place in Perth big.

While the malt is in the steep cistern it is repeatedly gauged by the exciseman, and the duty on the malt is levied by what is called the best gauge, or that which gives the greatest bulk of grain. It is in his power likewise to determine the quantity of malt in the subsequent processes, and, if any of them exceeds the best gauge in the cistern, to levy the duty by it. But these subsequent gauges are not susceptible of the same precision as the gauges in the cistern, when the grain is surrounded on all sides by perpendicular walls.

That carbonic acid is evolved during the steeping of grain, is obvious from the most simple experiments. If the steep-water be mixed with lime-water, the whole becomes milky, and carbonate of lime is deposited. If the steep-water be agitated, it froths on the surface like ale. If it be heated, it gives out carbonic acid gas, which may be collected over mercury. But we never were able to observe bubbles of gas extricate themselves from the grain during the steep, except once or twice during warm weather, when the steep-water was allowed to remain rather too long without being changed. In these cases, something like a commencement of fermentation, or perhaps of putrefaction, appeared to take place. But in general, there is reason to believe that nearly all the carbonic acid evolved in the steep remains in solution in the water, or

at least is extricated from the water in an imperceptible manner. From the observations of Saussure, it seems probable that the formation of carbonic acid in the steep is owing to the oxygen gas held in solution by the steep-water.

The steep-water gradually acquires a yellow colour, and the peculiar smell and taste of water in which straw has been steeped. At the same time, the barley becomes whiter, showing clearly that the water has absorbed a portion of colouring matter which existed in the husk or skin of the grain. The average quantity of matter dissolved by the water amounts to about $\frac{1}{70}$ th of the weight of the barley. The steep-water becomes much more deeply coloured when big is steeped in it than it does with barley, because big is darker in the colour, and its husk is thicker and contains more colouring matter. The matter of big taken up by the steep-water amounts to about $\frac{1}{40}$ th of the weight of the whole grain. When this steep-water is evaporated it leaves a matter of a yellow colour and disagreeably bitter taste, which deliquesces in a moist atmosphere. The only salt which it contains in any notable quantity is nitrate of soda.

Thus the only notable alterations which the kernel of barley undergoes in the steep are the absorption of water and the resulting increase of bulk. The matter taken up by the water seems to proceed only from the skin, and the evolution of carbonic acid may perhaps be owing to some commencement of alteration which this dissolved matter experiences. It can scarcely be ascribed to any change going on within the kernel itself.

2. When the barley is judged by the maltster to have remained long enough in the steep, which is the case when its two ends can be easily squeezed together between the finger and the thumb, the water is let off and the grain allowed to drain. It is then thrown out of the cistern upon the malt floor, where it is formed into as regular a rectangular heap as possible, which is called the *couch*. While in this position it is gauged by the exciseman, and if it measure more than it did in the steep, he is at liberty to charge the duty upon the quantity to which the grain now amounts. But as the barley in the couch cannot be rendered perfectly regular, it requires a good deal of skill and considerable attention to gauge it with tolerable accuracy. On that account the duty we believe is levied from the couch gauge. The grain is allowed to remain in the couch without any alteration for about twenty-six hours.

3. If we plunge a thermometer into the grain, and observe it from time to time, we shall find that the barley continues for some hours without acquiring any perceptible increase of heat. During this period the moisture on the surface of the corns gradually exhales or is absorbed, so that they do not perceptibly moisten the hand. But at last the thermometer begins to rise, and continues to do so gradually till the temperature of the grain is about ten degrees higher than that of the surrounding atmosphere. This happens usually in about ninety-six hours after it has been thrown out of the steep. It now exhales an agreeable odour, which has some resemblance to that of apples. If we thrust our hand into the heap we shall find that it feels warm, while, at the same time, it has become so moist as to wet the hand. The appearance of this moisture is called *sweating* by the maltsters, and it constitutes a remarkable period in the process of malting. We have reason to believe that a little alcohol is at this period exhaled by the grain.

If we examine the grains in the inside of the heap at the time of sweating, we shall perceive the roots beginning to make their appearance at the bottom of each seed. At first they have the appearance of a white prominence,

which soon divides itself into three rootlets. In big the number of rootlets seldom exceeds three, but in barley it frequently amounts to five or six. These rootlets increase in length with great rapidity, unless their growth be checked by artificial means; and the principal art of the maltster is directed to keep them short till the grain be sufficiently malted. The writer of this article has seen them increase in length nearly to two inches in the course of a single night; and when he purposely favoured the growth, in order to ascertain the effect upon the malt, he has seen them get to the length of three inches or more. In such cases, the heat of the grain rose very rapidly, and on one occasion was little inferior to eighty degrees. Indeed it is probable that, if not checked, the temperature would rise sufficiently high to char the grain, if not to set it on fire.

The too great growth of the roots, and the too high elevation of temperature, is prevented by spreading the grain thinner upon the floor, and carefully turning it over several times a day. At first the depth is about sixteen inches; but this depth is diminished a little at every turning, till at last it is reduced to three or four inches. The number of turnings is regulated by the temperature of the malt, but they are seldom fewer than two each day. In Scotland the temperature of the grain is kept as nearly as possible at fifty-five degrees; but in England we have generally found the temperature of the grain on the malt floor about sixty-two degrees. It has been generally supposed that the Hertfordshire method of making malt is the best; but, after a very careful comparison of the two methods, we were unable to perceive any superiority whatever in the English mode.

About a day after the sprouting of the roots, the rudiment of the future stem begins to make its appearance. This substance is called by the maltsters the *acrospire*. It rises from the same extremity of the seed with the root, and, advancing within the husk or skin, would at last (if the process were continued long enough) issue from the other extremity in the form of a green leaf; but the process of malting is stopped before the acrospire has made such progress.

While the grain is on the malt floor, it has been ascertained that it absorbs oxygen gas and emits carbonic acid gas; but to what amount these absorptions and emissions take place, has not been ascertained. They are certainly small; for the average loss which the grain sustains when on the malt floor is only three per cent., a considerable portion of which must be ascribed to roots broken off, and grains of barley bruised during the turning. As the acrospire shoots along the grain, the appearance of the kernel or mealy part of the corn undergoes a considerable change. The glutinous and mucilaginous matter in a great measure disappears, the colour becomes whiter, and the texture so loose that it crumbles to powder between the fingers. The object of malting is to produce this change. When it is accomplished, which takes place when the acrospire has come nearly to the end of the seed, the process is stopped altogether.

At this period, it was formerly the custom in Scotland to pile up the whole grain into a pretty thick heap, and allow it to remain for some time. The consequence is the evolution of a very considerable heat, while, at the same time, the malt becomes exceedingly sweet. But this plan is now laid aside, because it occasions a sensible diminution in the malt, without being of any essential service; for the very same change takes place afterwards, while the malt is in the mash-tun, without any loss whatever.

The time during which the grain continues on the malt-floor varies according to circumstances. The higher the

Brewing.

Brewing. temperature at which the grain is kept, the more speedily is it converted into malt. In general, fourteen days may be specified as the period which intervenes in England from throwing the barley out of the steep till it is ready for the kiln; while in Scotland it is seldom shorter than eighteen days, and sometimes three weeks. This, no doubt, is an advantage in favour of English malting, as every thing which shortens the progress, without injuring the malt, must turn out to the advantage of the manufacturer.

Kiln-drying.

4. The last part of the process is to dry the malt upon the kiln, which stops the germination, and enables the brewer to keep the malt for some time without injury. The kiln is a chamber, the floor of which usually consists of iron plates full of holes, and in the roof there is a vent to allow the escape of the heated air and vapour. Under this room is a space in which fire of charcoal or coke is lighted. The heated air which supplies this fire passes up through the holes in the iron plates, and makes its way through the malt, carrying off the moisture along with it. At first the temperature of the malt is not higher than 90°; but it is elevated very slowly to 140°, or even higher. We believe that in many cases it rises at last almost as high as 212°, though we have never witnessed any such high temperature ourselves. But we have seen pale malt dried at a temperature of 175°, without any injury whatever. The great secret in drying malt properly consists in keeping the heat very low at first, and only raising it very gradually as the moisture is dissipated. For a high temperature applied at first would infallibly blacken, or even char the malt, and would certainly diminish considerably the quantity of soluble matter which it contains. We shall here insert the table drawn up by Mr Combrune, from his own experiments, of the colour of malt dried in different temperatures.

Heat.	
119°	White.
124	Cream-colour.
129	Light yellow.
134	Amber-colour.
138	High amber.
143	Pale brown.
148	Brown.
152	High brown.
157	Brown inclining to black.
162	High brown speckled with black.
167	Blackish brown with black specks.
171	Colour of burnt coffee.
176	Black.

We have given this table, not on account of any information which it contains, but to put our readers on their guard against the false conclusions of this writer. We have taken malt dried at the temperature of 175°, put it into a garden pot filled with soil, and have seen it vegetate apparently as well as raw grain placed in the same situation. Now, this is only one degree lower than that in which Mr Combrune says malt is converted into charcoal, and it is four degrees higher than that in which his malt assumed the colour of burnt coffee. Certainly malt reduced to the colour of burnt coffee by heat would be deprived of the power of vegetating. Mr Combrune's experiments were made by putting malt into an earthen pan, which he placed over a charcoal fire in a stove, while he kept stirring the malt the whole time of the experiment. The bulb of the thermometer was placed half-way between the upper surface of the malt and the bottom of the vessel. Now the reader will perceive at once that the earthen pan would be much hotter than that part of the malt where the thermometer was placed. By the con-

stant stirring of the malt, the whole of it was gradually exposed to the burning action of the surface of the pan. Had the experiment been made without stirring the malt at all, and had the thermometer been placed near the surface, in that case the changes in the colour of the malt at the surface would have indicated the temperature to which it was exposed. But in the way that Mr Combrune conducted his experiments, the temperatures which he obtained were entirely fallacious. We have not the least doubt that the temperature of the earthen pan, towards the end of his experiment, was above 400°.

Mr Combrune's law, however, that the heat of the water in mashing ought to be regulated by the colour of the malt; namely, that the paler the malt is, the lower ought the temperature of the mashing water to be, is founded on accurate observations. The fact is, that boiling water would answer better than any other for mashing, because it would dissolve most speedily the soluble part of the malt. The only reason for not using it is, that the tendency of the malt to *set* increases with the temperature of the water. Now the higher the colour of the malt, the less is its tendency to set; but we may nevertheless use water of a higher temperature to mash with it. For the same reason, when raw grain is used, the temperature of the mashing water must be still lower than when malt is employed; because raw grain has a very great tendency to set.

The old malt-kilns had a bottom of hair-cloth instead of the iron plates full of holes, which constitute a more recent improvement. We have seen the thermometer in such a kiln, when the bulb touched the hair-cloth, rise as high as 186°. In general, the temperature of the malt-kiln is very carelessly regulated. We have seen malt for the very same purpose dried at a temperature which never rose higher than 136°; while a portion of the very same malt, put into another kiln, was heated as high as 186°. But such a careless mode of drying malt is reprehensible, and must be more or less injurious to the brewer. In general, the more rapidly malt is dried the more does its bulk increase. This method, accordingly, is practised by those who malt for sale, as is the case with most of the English maltsters; because malt is always sold by measure, and not by weight. The brewers would find it more for their interest to buy malt by weight than by measure. In that case the maltsters would dry their malt at as low a temperature as possible. But this would signify very little, or rather would be advantageous to the brewer; because dried malt soon recovers the moisture lost on the kiln when kept for some time in sacks. And when malt is dried at a low temperature, we are sure that none of it is injured by the fire. It will, therefore, go farther in the production of beer. The time of kiln-drying varies considerably, according to the quantity of malt exposed to the action of the heat; but when that quantity is not too great, we may estimate the time of kiln-drying, in general, at two days. After the fire is withdrawn, the malt is allowed to remain on the kiln till it has become nearly cold.

By the kiln-drying, the roots of the barley, or, as the maltsters call them, the *comings*, are dried up and fall off. They are separated from the malt by passing it over the surface of a kind of wire screen, which allows the *comings* to drop through, while the wires are too near each other to permit the grains of malt to pass.

If 100 lbs. of barley malted in this manner, with all the requisite care, be weighed just after being kiln-dried and produced clean, they will be found, on an average, to weigh 80 lbs. But if the raw grain be kiln-dried at the same temperature as the malt, it will lose 12 per cent. of its weight. Hence 12 per cent. of the loss which barley sustains in malting must be ascribed to moisture dissipated by the kiln-drying; so that the real loss of weight which barley

loss is owing to the formation and escape of carbonic acid gas. Brewing.

Big sustains a considerably greater loss of weight when malted than barley. The average loss of weight in our trials with barley was only eight per cent., while that of big was fifteen per cent., or nearly double. This, we conceive, is owing to the destruction of a much greater number of the corns during the process of malting big than barley. But in all our experiments on big, that grain was manifestly oversteeped. To this, perhaps, a good deal of the difference may be ascribed. Our maltsters had not been in the habit of malting big, and therefore were not likely to do it so much justice as they did to the barley. Hence it would be improper to venture upon any general conclusions from the experiments which we made upon the malting of big.

The bulk of the malt is usually greater than that of the barley from which it was obtained ; but this varies a good deal according to the goodness of the grain and the mode of drying the malt. In our trials, made all in the same way, 100 bushels of the different kinds of grain gave, on an average, the following results :

The greatest quantity in bushels obtained from 100 bushels of English barley was $111\frac{1}{4}$, the least 106 bushels. The greatest quantity obtained from 100 bushels of Scotch barley was 109, and the least 98 bushels. The greatest quantity obtained from 100 bushels of big was 103 bushels, the least 97 bushels. Hence it appears that, on malting English barley, there is a profit of nine per cent., while big yields scarcely any thing more than its bulk before malting. The English maltster makes more bushels of malt than he pays duty for; but the maltster of big, on the contrary, obtains fewer.

We shall subjoin here two tables, which exhibit in one view the result of a considerable number of trials made by the author of this article, on malting different varieties of grain. The barley is distinguished by the name of the county where it grew. To understand the first table, the reader must know that excisemen estimate the quantity of malt by subtracting one fifth from the best or highest gauge in the steep or couch, and charge the duty accordingly.

TABLE I

BIG.	Original bulk of Grain.	Bulk by best Gauge in Steep or Couch.	Produce in Malt.	Malt charged Duty.	Differ- ence per cent.
<i>First Qualities.</i>					
Dumfries	100	112·0	97·6	89·6	
Dumfries	100	132·8	97·9	106·2	
Lanark.....	100	121·6	103·3	96·3	
Perth.....	100	120·9	102·9	95·7	
Perth.....	100	120·7	99·1	95·5	
Perth.....	100	112·8	97·4	89·2	
Aberdeen.....	100	127·3	100·7	101·8	
Aberdeen.....	100	125·6	99·9	100·5	
Aberdeen.....	100	114·5	94·1	91·6	
Aberdeen.....	100	124·0	98·7	99·2	
Average.....	100	121·2	99·1	97·0	2·1
General average	... ..	... ..	... ..	... ..	... ..

BIG.	Original bulk of Grain.	Bulk by best Gauge in Steep or Couch.	Produce in Malt.	Malt charged Duty.	Differ- ence per cen
<i>Second Qualities.</i>					
Kirkcudbright..	100	119·5	101·2	95·6	
Ayr.....	100	114·2	101·1	91·3	
Angus.....	100	127·4	96·8	101·9	
Angus.....	100	121·6	94·5	97·2	
Means	100	121·3	96·5	97·0	
Average.....	100	120·8	98·1	96·6	1·5
<i>Third Qualities.</i>					
Kirkcudbright..	100	110·6	94·5	88·4	
Aberdeen	100	123·1	105·0	98·4	
Average.....	100	116·8	99·7	93·4	6·3
... ..	... ..	... ..	... ..	... ..	3·3

TABLE I.—continued.

Brewing.

Brewing.

BARLEY. ENGLISH.	Original bulk of Grain.	Bulk by best Gauge in Steep or Couch.	Produce in Malt.	Malt charged Duty.	Differ- ence per cent.	BARLEY. SCOTCH.	Original bulk of Grain.	Bulk by best Gauge in Steep or Couch.	Produce in Malt.	Malt charged Duty.	Differ- ence per cent.
<i>First Qualities.</i>						<i>First Qualities.</i>					
Norfolk	100	123.0	109.5	98.4		Berwick and Haddington..	100	119.8	100.6	95.8	
Norfolk	100	121.5	104.5	97.2		Haddington....	100	121.0	109.4	96.8	
Kent	100	128.0	111.2	102.4		Haddington....	100	121.0	103.1	96.8	
Kent	100	119.7	106.3	95.8		Linlithgow....	100	118.7	106.2	94.9	
Suffolk.....	100	123.7	101.6	98.6		Perth	100	127.3	102.4	101.8	
Suffolk.....	100	116.8	100.8	93.4		Fife.....	100	125.3	100.1	100.2	
Average.....	100	122.1	105.6	97.6	8	Angus.....	100	123.8	103.6	100.6	
<i>Second Qualities.</i>						Edinburgh....	100	123.8	98.6	99.0	
Norfolk	100	129.6	109.2	103.7		Edinburgh....	100	116.7	102.7	93.3	
Norfolk	100	122.0	103.9	97.6		Average.....	100	119.6	102.9	97.6	5.3
Suffolk	100	137.9	107.6	109.5		<i>Second Qualities.</i>					
Kent	100	133.2	109.2	106.5		Berwick and Haddington..	100	119.4	100.9	95.5	
Kent	100	125.6	105.3	100.4		Haddington....	100	125.8	103.2	100.6	
Average.....	100	129.6	107.0	104.4	2.6	Perth	100	114.2	96.9	91.3	
<i>Third Qualities.</i>						Fife.....	100	119.6	94.0	95.6	
Norfolk	100	128.2	106.4	102.5		Average.....	100	119.7	98.7	95.7	3
Norfolk	100	127.1	104.5	101.6		<i>Third Qualities.</i>					
Essex.....	100	134.5	106.5	107.6		Berwick.....	100	115.2	98.2	92.1	
Essex.....	100	126.3	105.8	101.0		Haddington....	100	120.0	101.6	96.0	
Essex.....	100	128.0	102.1	102.4		Linlithgow....	100	113.6	92.3	90.8	
Essex.....	100	120.5	97.6	96.4		Linlithgow....	100	121.0	93.4	96.8	
Average.....	100	127.4	103.4	101.9	1.9	Fife.....	100	117.5	91.5	94.0	
General average	...	...	...	...	4.03	Angus.....	100	120.8	101.1	96.6	
						Average.....	100	118.0	96.3	94.4	1.9
						General average	...	...	...	...	3.4

TABLE II.

BARLEY.	Weight per Bushel, in lbs.	Bushels Measur- ed out.	Swim- mings in Bush- els.	Bushels really Steeped.	Swim- mings in lbs. Avoir- du-pois.	Weight of Grain really Steeped, in lbs.	Hours in Steep.	Swell per cent. in Steep.	Swell per cent. in Couch.	Days on Floor.	Clean Malt in Bushels.	Weight of Clean Malt per Bushel, lbs.	Appa- rent loss of Weight per cent.	BUSHELS OF MALT. From 100 Bushels Grain.	From 100 lbs. Grain.	POUNDS OF From 1 Bushel Grain.
<i>First Quality.</i>																
ENGLISH.																
Norfolk	50.375	150	1.4	148.60	43.18	7509.82	116	16	23.08	18	162.75	36.58	20.0	109.5	2.17	40.063
Norfolk	50.375	150	1.75	148.25	43.00	7513.50	93.75		21.5	16	155.00	38.40	21.2	104.5	2.06	40.152
Kent	49.750	90	1.96	88.09	56.45	4421.05	86	25	28	12	98	34.88	23.0	111.2	2.22	38.816
Kent	49.914	90	1.75	88.25	40.50	4442.63	52	15.7	19.7	17	93.87	35.76	25	106.3	2.11	38.926
Suffolk	50.508	150	2.68	147.32	84.15	7494.00	49		23.3	13	149.75	40.56	21	101.6	2	41.227
Suffolk	50.859	72	1.28	70.72	29.44	3632.40	44		16.8	13	71.31	39.11	23.2	100.8	1.96	39.435
Average	50.297						73.4	18.9	22.06	14.6		37.55	22.2	105.6	2.09	39.736
SCOTCH.																
Berwick and Haddington..	53.093	114.75	1.23	113.52	23.87	6068.60	119		19.8	18	114.18	39.60	25.4	100.6	1.88	39.840
Haddington..	52.190	60	0.5	59.50	13.75	3117.50	92	21		20	64.50	38.06	21	199.4	2.07	41.618
Haddington..	52.190	75	0.3	74.70	11.26	3902.80	112	21	21	19	77	39.18	23	103.1	1.97	40.386
Linlithgow...	51.062	66	0.56	65.44	18.34	3352.81	109	24.5	18.7	9	69.5	39.09	19	206.2	2.07	41.520
Perth.....	50.226	66	0.75	65.25	21.00	3293.95	57		27.3		66.86	38.18	22.49	102.4	2.03	39.131
Fife.....	51.539	148	1.62	146.38	40.00	7578.78	81		25.3	14	146.54	38.80	25.07	100.1	1.93	38.843
Angus.....	49.312	66	1.68	64.32	44.37	3210.25	80	25.8	23.8	8	66.6	36.76	24	103.6	2.07	38.074
Edinburgh...	52.164	111	1.50	109.5	41.37	5748.82	76	23	23.8	14	108	41.92	21	98.6	1.88	41.345
Edinburgh...	52.164	90	1.25	88.75	34.47	4660.29	52.5	14.8	16.7	16	91.12	40.24	22	102.7	1.95	41.319
Average.....	51.549						86.5	21.7	19.6	13		39.09	22.6	102.9	1.98	40.23

BREWERY.	Weight per Bushel in lbs.	Bushels Measured out.	Swimmings in Bushels.	Bushels really Steeped.	Swimmings in lbs. Avoirdupois.	Weight of Grain really Steeped, in lbs.	Hours in Steep.	Swell per cent. in Steep.	Swell per cent. in Couch.	Days on Floor.	Clean Malt in Bushels.	Weight of Clean Malt per Bushel, lbs.	Apparent loss of Weight per cent.	BUSHELS OF MALT.		POUNDS OF MALT.	
														From 100 Bushels Grain.	From 100 lbs. Grain.	From 1 Bushel Grain.	From 1 lb. Grain.
<i>Big.</i>																	
Dafries....	47-000	75	3-28	71-72	77-00	3448-00	73		12	13	70	36-81	23-5	97-6	2-03	35-930	0-765
Dafries....	47-726	80	2-03	77-97	59-96	3758-16	80	25-8	32-8	8	76-31	37-70	23-5	97-9	2-03	36-899	0-765
Lark.....	48-562	150	2-67	147-33	79-65	7204-72	80	11	21-6	18	152-25	36-44	23	103-3	2-11	37-637	0-770
Pen.....	48-585	100	2-00	98	61-84	4796-66	104	17	20-9	13	100-94	34-44	27-5	102-9	2-10	35-374	0-724
Pen.....	48-562	98	3-25	94-75	97-45	4661-68	73	18	20-7	13	93-86	37-57	24-5	99-1	2-01	37-237	0-757
Pen.....	48-562	90	3-00	87-00	81-06	4289-56	45	9-4	12-8	15	84-75	36-53	28	97-4	1-97	35-586	0-722
Aldeen...	48-226	90	2-09	87-91	55-81	4284-57	74	23	27-3	8	88-50	38-37	21	100-7	2-06	38-633	0-793
Aldeen...	48-562	150	2-68	147-32	88-19	7196-19	89		25-6	10	146-25	36-03	26-8	99-3	2-13	35-770	0-732
Aldeen...	48-312	90	2-25	87-75	57-50	4291-62	58		14-5	10	82-60	39-00	25	94-1	1-93	36-712	0-751
Aldeen...	49-172	90	2-26	87-74	60-75	4364-72	57		24		86-58	39-44	21-7	98-7	1-98	38-906	0-783
Average	48-327						73	17-3	21-2	10-8		37-23	24-4	99-1	2-03	36-868	0-756
<i>Seed Quality.</i>																	
<i>ENGLISH.</i>																	
Norfolk.....	50-57	150	2-56	147-44	58-00	7527-50	115	24	29-6	15	161-00	38-437	18	109-19	2-113	41-972	0-822
Norfolk.....	51-00	150	3-50	146-50	70-87	7579-20	88		22-0	13	152-13	37-562	24-6	103-86	2-007	39-013	0-784
Sussex.....	48-845	80	3-12	76-87	85-00	3822-49	87	37-9	37-9	9	82-77	36-5	21	107-67	2-165	39-229	0-790
Ken.....	50-062	80	2-25	77-75	62-87	3942-13	84	27-8	33-2	9	84-87	39-125	16	109-16	2-165	42-612	0-842
Ken.....	49-945	150	4-43	145-57	112-37	7385-24	89		25-6	12	153-00	36-875	23-46	105-31	2-072	38-823	0-765
Average.....	50-084						92	29-9	29-6	13		37-699	20-61	107-03	2-104	40-343	0-794
<i>Scotch.</i>																	
Beck and																	
Haddington.	50-53	126	1-50	124-50	44-00	6323-00	97		19-4	16	125-69	38-501	23-46	100-95	1-990	38-865	0-765
Haddington.	52-26	150	1-25	148-75	32-81	7807-03	118	22	25-8	19	153-50	37-298	27	103-19	1-960	38-490	0-733
Pen.....	48-19	66	1-90	64-10	48-37	3132-51	64		14-2	10	62-12	39-531	21-6	96-91	1-983	38-310	0-784
Fife.....	48-51	100	1-45	98-55	36-12	4834-25	47½		19-6	11	92-68	40-039	23-24	94-04	1-917	38-669	0-767
Average.....	49-87						81-6	22	19-7	14		38-842	23-82	98-77	1-962	38-583	0-762
<i>Big.</i>																	
Kirkcubright...	46-87	150	4-56	145-44	112-16	6109-10	89	15	19-5	15	147-25	36-400	26-5	101-24	2-128	36-853	0-744
Ayr.....	47-94	150	2-84	147-16	77-00	7113-62	66½		14-2	16	148-75	37-832	20-89	101-08	2-091	38-330	0-791
Ans.....	47-03	108	3-12	104-87	85-87	4993-50	83	21	27-4	8	101-53	37-547	24-70	96-81	2-033	36-349	0-763
Ans.....	47-39	150	4-34	145-66	119-72	6989-46	57		21-6	13	137-73	38-570	24-8	94-55	1-971	36-083	0-751
Mens.....	47-91	126	1-82	124-18	51-87	5985-27	57		21-3	13	119-87	37-55	24-8	96-52	2-004	36-238	0-752
Average.....	47-42						70-45	18	20-8	13		37-579	24-33	98-06	2-045	36-770	0-760
<i>Thin Quality.</i>																	
<i>ENGLISH.</i>																	
Norfolk.....	51-937	150	1-75	148-25	46-0	7744-64	91	22	28-2	12	157-75	36-68	23	106-41	2-037	39-033	0-747
Norfolk.....	51-625	150	2-47	147-53	60-5	7663-70	84		27-1	14	153-14	37-61	24-8	104-50	1-998	38-774	0-759
Ans.....	47-633	90	3-59	86-44	107-2	4179-72	98	30	34-5	13	92-06	35-12	23	106-55	2-202	37-423	0-770
Ans.....	48-414	100	3-87	96-12	119-6	4721-77	82	22-4	26-3	10	101-50	36-86	21	105-83	2-149	38-923	0-794
Ans.....	48-000	100	3-50	96-50	84-0	4716-00	73		28-0	10	98-56	35-66	25-5	102-13	2-090	36-417	0-745
Ans.....	46-410	100	6-25	93-75	159-0	4482-37	45		20-5	11	91-26	38-67	21	97-66	2-036	37-772	0-790
Average.....	49-004						78	24-8	27-4	11		36-76	23	103-84	2-085	38-057	0-767
<i>Scotch.</i>																	
Beck and																	
Haddington.	48-854	150	2-22	147-78	64-0	7263-63	74		15-2	14	145-14	37-31	25-4	98-21	1-998	36-656	0-746
Haddington.	48-969	150	2-90	147-10	78-0	7267-30	97	20	19-7	15	149-43	36-82	24-3	101-58	2-056	37-399	0-757
Linlithgow...	46-940	66	2-78	63-22	77-2	3021-14	47		13-6	10	58-34	40-16	22-5	92-28	1-931	37-057	0-775
Linlithgow...	46-375	66	2-00	64-00	57-5	3003-25	49		20-7	9	59-78	39-09	23-5	93-41	1-990	35-980	0-767
Fife.....	49-744	66	0-75	65-25	20-5	3262-22	56		17-5	11	59-72	40-81	25-3	91-52	1-831	37-353	0-747
Angus.....	46-965	66	2-50	63-50	61-7	3037-82	53		20-8	10	64-22	36-41	23-0	101-13	2-114	36-817	0-770
Average.....	47-974						62		17-9	11		38-43	24-0	96-35	1-986	36-877	0-760
<i>Big.</i>																	
Kirkcubright...	44-722	150	6-09	143-91	235-6	6473-00	65		10-6	14	136-00	35-03	26-4	94-5	2-101	33-108	0-736
Ans.....	44-086	40	2-25	37-75	66-0	169-74	77	22	23-1	8	39-62	33-50	22-0	105-0	2-334	35-164	0-782
Average.....	44-404						71		16-8	11		34-26	24-2	99-7	2-217	34-136	0-759

Brewing.
Nature of
the pro-
cess.

Thus it appears that the process of malting is nothing else than causing the barleycorns to germinate, and stopping that process before the green leaf makes its appearance. A quantity of roots are formed, which are afterwards rubbed off and separated, and the weight of which amounts to about four per cent. of the grain malted. The kernel of the grain undergoes a remarkable change by this process. It consists almost entirely of starch; but it was agglutinated in the grain, so as to form a solid and very firm mass; whereas, in the malt, it is quite loose and mealy. Hence it would appear that the glutinous and mucilaginous matter of the barleycorn is chiefly employed in forming the roots; and that this is the purpose for which it was laid up in the grain. How far the starch is altered does not appear. It is probable that it has undergone some change. Malt has a slightly sweet taste, much more agreeable than the taste of the raw grain, without any of that strong and cloying sweetness which distinguishes wort. But the most distinguishing character of the starch of malt is the ease with which it dissolves in hot water; though cold water does not act upon it sensibly. Whether this property be peculiar to the starch of barley, or be induced by the malting, we cannot say. We conceive it probable that barley starch is more easily soluble in water than wheat starch, from the ease with which raw grain is constantly employed by distillers to form their worts. In its other chemical characters, the starch of barley malt agrees with that of wheat starch.

Soluble
part of
malt.

We should err very much, however, were we to suppose that the whole kernel or starchy part of the malt is dissolved by the hot water used in brewing. At least one half of the malt still remains after the brewing is over, constituting the grains, which are known to constitute a most nourishing article of food for cattle, and therefore to contain much more than the husks or skin of the malt corn. One hundred lbs. of malt from different kinds of grain, after being exhausted as much as usual of the soluble part of the kernel by hot water, were found to weigh as follows:—

English barley.....	50.63 lbs.
Scotch barley.....	50.78
Scotch big.....	52.69

100 lbs. of raw grain being converted into malt, and the soluble part of the malt extracted by hot water, the residue weighed,—

English barley.....	51.558 lbs.
Scotch barley.....	50.831
Scotch big.....	53.500

In another set of experiments, 100 lbs. of malt left the following residues:—

English barley.....	54.9 lbs.
Scotch barley.....	56.9
Scotch big.....	56.6

100 lbs. of the raw grain being converted into malt, and the soluble part of the malt extracted by hot water, the residues weighed,—

English barley.....	54.8 lbs.
Scotch barley.....	56.9
Scotch big.....	56.6

Hence we see that in all these cases the bulk of the malt was very nearly the same as the previous bulk of the barley before it was malted.

In another set of experiments, 100 lbs. of malt left the following residues:—

English barley.....	54.0 lbs.
Scotch barley.....	56.1
Scotch big.....	56.6

100 lbs. of the raw grain being converted into malt, and the soluble part of the malt being extracted by hot water, the residues weighed,—

English barley.....	54.63 lbs.
Scotch barley.....	56.09
Scotch big.....	56.59

Brewing

Here also the bulk of the malt differed but little from that of the raw grain. The first of these sets of experiments was made with grain of the best quality, the second with grain of the middling quality, and the third with grain of the third quality.

It is probable that an additional portion of the kernel would be dissolved if the malt were ground finer than it is customary to do. The reason for grinding it only coarsely is to render it less apt to set. But this object might be accomplished equally well by bruising the malt between rollers, which would reduce the starchy part to powder, without destroying the husk. This method, indeed, is practised by many brewers, but it ought to be followed by all.

CHAP. IV.

OF BREWING.

Brewing consists of five successive processes, which are distinguished by the following names: 1. *Mashing*; 2. *Boiling*; 3. *Cooling*; 4. *Fermenting*; 5. *Cleansing*. We shall afterwards give a description and view of the utensils employed in a large London porter brewery, where they have been carried to the greatest perfection. But we conceive it better to give a description of the processes themselves, in the first place, without referring them to any specific form of vessels; observing only, that the size of all the utensils must be proportional to the quantity of beer which it is proposed to make at once.

1. The specific gravity of malt varies a good deal, according to the way in which it is dried upon the kiln; but its mean specific gravity may be stated at 1.201. In general the specific gravity of big malt is rather inferior to that of malt from barley. Let us suppose, for the sake of stating the comparative quantities, that it is our object to employ in a single brewing fifty bushels of malt. The first thing to be done is to grind the malt in a mill, and the best kind of mill for the purpose is that in which the malt is made to pass between two iron rollers.

We must be provided with a copper boiler capable of containing at least the fifty bushels of malt; or its solid contents must, at the smallest, amount to 382 ale gallons, which are rather more than 107,521 cubic inches or 62½ cubic feet. This copper boiler must be placed over brick work upon a furnace, and there must be conveniences for filling it with water, and for letting the water off when sufficiently heated, into the mash-tun.

The mash-tun is a wooden vessel composed of staves properly fixed by means of iron hoops, and usually placed in the middle of the brew-house. It has a false bottom full of holes at some little height above the true bottom. Its capacity varies according to the extent of the brewery establishment; but a mash-tun capable of mashing fifty bushels of malt must be at least one third larger than the bulk of the malt, or it must be capable at least of containing 75 bushels.

A quantity of water, equal at least in bulk to that of the malt, is to be put into the boiler, and heated up to 190° or 180°, according to the fancy of the brewer and the quality of the malt; but the best brewers, in general, employ the lowest temperature. This water is then to be let into the mash-tun, and the malt, previously ground, is to be let down into it immediately after. It is then mixed with the water and all the clots carefully broken, either by workmen, who use for the purpose very narrow wooden shovels, or, when the capacity of the mash-tun is very great, as in the London breweries, by a machine which is

driven by a steam-engine. Great care must be taken to break all the clots, because the whole of the malt within them would otherwise escape the action of the water, and be lost to the brewer. When the water and malt are sufficiently mixed, the mash-tun is covered and left in this state about three hours. But the time varies according to circumstances.

Though the specific gravity of a malt corn be greater than that of water, yet if it be thrown into that liquid it always swims. The reason is, that between the skin and the kernel there is lodged a quantity of air, which it is not easy to drive away. Accordingly, brewers are in the habit of judging of the goodness of malt by throwing a certain quantity of it into water, and, reckoning the grains which fall to the bottom, these indicate the proportion of unmalted grain which the malt contains. Of course the more of them that exist in any given quantity of malt, the worse must the malt be considered. But though malt, when we consider only single corns, is about a sixth heavier than water, yet a bushel of malt does not weigh so much as one third of a bushel of water. For, on one occasion, the hot water in the mash-tun, before the addition of the malt, stood at the height of twenty-two inches. On adding the malt, it rose to the height of twenty-nine inches. The bulk of the water was fifty-one bushels; that of the malt before grinding, forty-seven and a half bushels. We see from this that the real space occupied in the mash-tun by the forty seven and a half bushels of malt was only seven inches, while the fifty-one bushels of water occupied the space of twenty-two inches; therefore about two thirds of the bulk of the unground malt consisted of interstices filled with air.

The temperature of the water is considerably lowered when it is mixed with the malt, but we have been unable to determine how much, from the impossibility of thrusting a thermometer down to the centre of the mash-tun, the only place that would give a correct result. But we may state a few out of the many observations which we have made on the subject; fifty-one bushels of water of the temperature 192° were mixed with forty-seven and a fourth bushels of malt; after mixture, the temperature at the surface of the mash was 140°. Two hours and a half after, when the wort began to run off, its temperature was 156°, and at that time the surface of the mash was at the temperature of 136°. If we suppose in this case that the whole mash lost four degrees as well as the surface, and take the mean between the bottom and top, we shall have the mean heat of the whole, after the mashing, 150°; so that the water has lost 32° of heat, while the malt (its temperature before mixture was 48°) gained 102°.

The weight of the water, reckoning it at 51 bushels, was.....3965.25 lbs.
That of the malt was.....1788.80 lbs.

This would make the specific heat of the malt 0.69, which is probably considerably above the truth; for, according to the experiments of Dr Crawford, the specific heat of barley is only 0.421; so that our supposition, that the mean temperature after mashing was only 150°, is not quite accurate. Were we to suppose the specific heat of malt to be 0.42, which cannot be very far from the truth, in that case the mean temperature, after mashing, would be 169°, if the water was 192° and the malt 48°, and the weight of each as above stated.

In another experiment, in which sixty bushels of malt were mashed, the heat of the water was 180°, that of the malt 56°, the temperature, on adding the malt to the water and mixing it well, was at the surface 141°. Four hours after, when the wort began to be drawn off, its temperature was 150°, and that of the surface of the mixture of malt and water in the mash-tun was 138°.

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The bulk of water was 66½ bushels, its weight 5157 lbs. The weight of the malt was.....2283.6 lbs.

Any person may easily, from these data, calculate what the heat of the mixture after mashing ought to be, supposing the specific heat of the malt to be 0.42. The common formula for the calculation is

$$S = \frac{W \times w - m}{B \times m - b},$$

in which S denotes the specific heat of the malt, W the weight of water used, w its temperature, B the weight of malt used, and b its temperature, and m (which in the present case is the quantity sought) the temperature after mixture. We do not think it worth while to give any more examples of these changes of temperature, though we are in possession of abundance of them; because we do not conceive that they can lead to any useful results.

After the mash has continued for about three hours (or Wort longer or shorter according to circumstances), a stop-cock, placed below the false bottom in the mash-tun, is opened, and the wort allowed to run out into a vessel prepared to receive it, and known by the name of *underback*. At the same time the cover is taken off the mash-tun, and quantities of water of the temperature of 180° are occasionally sprinkled over it from the boiler, which had been again filled with water to be heated as soon as the water for mashing was drawn off. No specific directions can be given respecting the quantity of hot water added in this manner by sprinkling, because that must depend upon the views of the brewer. If he wishes to have ale of very great strength, he will of course add less water; if the ale is to be weak he will add more. The best way is to determine the strength of the liquor as it flows into the underback, by means of a saccharometer, or by taking its specific gravity. When the specific gravity (at 60°) sinks to 1.04 or 1.05, or when it contains only 36½ or 46½ lbs. per barrel of solid matter in solution, it would be useless or injurious to draw any more off for making strong ale. But an additional portion may still be drawn off and converted into small beer. We have seen the brewers in Edinburgh continue to draw off small beer from the mash-tun till the liquid indicated only 23½ lbs. per barrel, or even till it indicated 17½ lbs. per barrel; that is, till its specific gravity at 60° was reduced to 1.027 or 1.020. Indeed the strength of small beer is often much weaker than this when it is obtained from malt without drawing off any strong ale wort; but when it is the residue of strong ale, it is necessary to make it stronger, otherwise its quality will be bad. About twenty-five years ago, it was customary with some of the small-beer brewers in Edinburgh to make the small beer of considerable strength; and after the exciseman had determined its quantity, and the duty to be paid on it, they diluted it largely with water, just when they were sending it out of the house. This fraud was easily put in practice, because the small beer is usually disposed of the moment it is mixed with the yeast, and before it has undergone any fermentation whatever. It ferments sufficiently in the small casks in which it is sent to the consumers. In Edinburgh it is customary to bottle this small beer, which makes it clear and very brisk, and consequently very agreeable to the palate.

Neither can any general rule be laid down for the specific gravity or strength of the wort when it begins to flow from the mash. It will obviously depend upon the goodness of the malt, and upon the quantity of mashing water employed, when compared with the quantity of malt. We have seen it begin to flow from the mash-tun of the specific gravity 1.084, 1.0805, 1.0815, 1.0835, 1.091, 1.094, or containing respectively 78½, 74½, 75½, 78, 85, and 87½ lbs. per barrel.

The wort, as it first flows from the mash-tun, is a trans-

Brewing. parent liquid of a fine amber colour, a peculiar smell, and a rich, luscious, sweet taste. If it is cloudy, as sometimes happens, it is a proof that the water used for mashing was of too high a temperature. We have seen the wort run cloudy from the mash-tun when the temperature of the water had been as high as 200° or 191°, but never when it was no higher than 180°. This affords an additional reason with the brewers for keeping the temperature of the mashing-water low. But we have some doubts about the accuracy of the reason. For, when the wort is afterwards boiled, it always deposits a copious flocky sediment. The boiling would doubtless render even turbid wort transparent, and would not probably increase the sediment much. At the same time it must be acknowledged, that some obscurity hangs upon this part of the process of brewing. For we have seen wort continue opaque during the whole process of boiling, cooling, and fermenting, and requiring ultimately to be clarified, or *fined*, as the brewers termed it, by means of isinglass. The substance which rendered the ale in this case turbid seemed to be a variety of starch, or some particular form of that substance, for it was completely precipitated by infusion of nutgalls, and the precipitate was redissolved by the application of a moderate heat.

The flowing of the wort from the mash-tun takes up six or eight hours. As it advances the colour diminishes, the smell becomes less agreeable, and the taste less sweet. At last the colour becomes nearly opal, and the smell becomes sour, and somewhat similar to the odour emitted by an infusion of meal and water left till it has become sour. Yet it produces no change on vegetable blue colours.

Constitu-
ents of
wort.

If the wort which first comes over be evaporated to dryness, it leaves behind it a yellow-coloured residuum, which has a sweet taste, dissolves readily in water, absorbs water from the atmosphere, and becomes clammy, and similar in appearance to treacle. Its specific gravity is 1.552. This does not differ much from the specific gravity of common refined sugar, if we take a mean of the experiments of Fahrenheit and Hassenfratz. Fahrenheit found the specific gravity of sugar 1.6065, while Hassenfratz found it 1.4045, the mean of which is 1.5055. There can be no doubt that this residue contains a good deal of sugar, precisely the same in its properties with the sugar into which starch is converted by boiling it in a very dilute acid. But it is mixed likewise with a considerable portion of starch, which has become soluble in water, without being converted into sugar. For wort gives a copious precipitate with the infusion of nutgalls, and this precipitate is redissolved by a moderate increase of temperature, properties which characterize starch.

From the experiments of Saussure, it would appear that starch sugar is nothing else than a combination of starch and sugar. Hence it is probable that, during the mashing, a combination takes place between the starch of the malt and the water, the result of which is the formation of starch sugar. This sugar agrees in its properties with the sugar of grapes. It crystallizes in needles grouped together in the form of small sapericles like granulated honey. It does not go so far in sweetening as common sugar, and, like sugar of grapes, it ferments without the addition of yeast. We have attempted in vain to separate the saccharine part of the residue of wort from the starch. When alcohol is poured over it, no solution takes place; but such is the affinity of the residue of wort for water, that it deprives the alcohol of a portion of its water, just as carbonate of potash or muriate of lime does, and a very viscid liquid, consisting of the residue of malt dissolved in a very small quantity of water, is formed at the bottom of the vessel.

It is exceedingly difficult to evaporate wort without

partly decomposing the extractive residue. The best way is to put it upon a very flat dish, and to apply a heat not greater than 120°. We have charred it completely in a glass vessel, filled with alcohol, without applying heat sufficient to make the alcohol boil. Indeed we never succeeded in obtaining the residue of wort without its colour being a good deal darker than that of the wort from which it was obtained.

The wort which runs off last contains very little saccharine matter; but some starch and mucilaginous matter may still be detected in it. The flavour and beauty of the ale is increased if we take only the wort that runs first off, and throw away the last drawn worts, or employ them only in the manufacture of small beer.

2. The next process in brewing is the *boiling* of the wort. The wort is pumped up from the *underback* into the copper boiler, where it is boiled for several hours, till it has acquired the degree of strength which is wanted by the brewer.

It may be proper to give some examples of quantities, to enable the reader to form a better idea of the effect of the boiling.

From sixty bushels of malt there were obtained 23.465 barrels of wort, of the strength of 64.37 lbs. per barrel, or of the specific gravity 1.0683. It was boiled down to 19.736 barrels of the strength of 82.7 lbs. per barrel, or of the specific gravity 1.089.

From sixty bushels of big malt there were obtained 23.8193 barrels of the specific gravity 1.0648, or of 58.75 lbs. per barrel of saccharine matter. It was boiled down to 19.736 barrels of the specific gravity 1.078, or of 72½ lbs. per barrel of saccharine matter.

From seventy-two bushels of malt 15.1388 barrels of the specific gravity 1.071, or of 60.6 lbs. per barrel, it was boiled down to 13½ barrels of the specific gravity 1.1055, or of 98½ lbs. per barrel of saccharine matter.

From fifty bushels of malt 13.444 barrels of wort were obtained, of the specific gravity 1.068, or of 63.125 lbs. of saccharine matter per barrel. It was boiled down to 11.083 barrels of the specific gravity 1.1015, or of 94½ lbs. per barrel.

Various contrivances have been fallen upon to economize the boiling process; but these will come under our consideration with more propriety when we proceed to give an account of the utensils in a London brewery.

The flocky precipitate which forms during the boiling of the wort, as far as we have been able to determine its properties, approaches nearly to the nature of gluten or vegetable albumen, for these two substances differ very little from each other.

While the wort is in the boiler, the requisite quantity of hops are added to flavour the ale, and render it capable of being kept for a considerable length of time without souring. Hops, as is well known, are the seed-pods of the *Humulus lupulus* or *hop-plant*, which is cultivated in considerable quantities in the south of England, especially in Kent and Hampshire. The seed-pods of this creeping plant are collected when ripe, and dried upon a kiln. They are then packed up in bags, and sold to the brewers. Hops are well known to have a peculiar bitter taste, and a weak aromatic odour, and to possess sedative qualities to a considerable extent. A pillow filled with hops has often been found to induce sleep when every thing else has failed. If they be digested for some days in alcohol, that liquid acquires a slight greenish colour, a peculiar taste, and an odour in which that of the hop can be distinctly perceived. If the alcohol, previously freed from the undissolved matter, be distilled in a retort, there remains behind a solid green-coloured oil. It is to this oil that hops owe their peculiar smell. Its taste is peculiar,

wing. sharp, and scarcely bitter, but putting one in mind of the peculiar flavour of good ale. This oil is the part of the hops which gives ale its distinguishing flavour. It is apt to be dissipated by long boiling. Hence, when hops are too long boiled in wort, the aromatic odour and peculiar flavour are nearly dissipated, and a bitter taste substituted. It is the opinion of brewers, that the intoxicating qualities of ale are to be partly ascribed to the oil of the hop. Indeed it has been pretty common to ascribe intoxicating qualities to bitter-tasted substances in general. Thus, a woman of the name of Johnston, who kept a public-house a little to the south side of the Meadows, near Edinburgh, about the beginning of the last century, was famous for brewing a pleasant and very intoxicating ale; and the last quality was universally ascribed to the broom tops which she employed as a bitter instead of hops. This woman's name is remembered, because her ale and her house are celebrated in the poems of Allan Ramsay. But the opinion above stated, though very general, does not appear to be founded upon any precise experiments or observations. We are not acquainted with any volatile oil which produces intoxication; though some of them, as oil of turpentine, act with great energy upon the stomach. No infusion of any bitter whatever, not even of hops, is known to produce intoxication; nor is any effect in the least similar to intoxication produced when considerable quantities (2 oz. per day for example) of Peruvian bark are swallowed in substance.

Besides the volatile oil, hops contain likewise a quantity of bitter principle, which may be easily extracted from them by water. As far as we were able to determine the point, this bitter matter possesses the characters of the bitter principle in perfection. No re-agent that we tried is capable of throwing it down except acetate of lead, a somewhat ambiguous precipitant, because it throws down the greater number of vegetable substances, and because the lead in this salt is partially thrown down by carbonic acid, if it happens to be present in the solution. Nitrate of silver is likewise a precipitant, throwing down the bitter principle of hops in light yellow flocks. But this precipitant is also somewhat ambiguous, for the same reason that renders acetate of lead so. The bitter principle of hops is likewise very soluble, both in water and in alcohol.

Hops communicate both their flavour and their bitter taste to wort. The quantity employed varies very much, according to the taste of the persons who are to drink the ale. The stronger the ale, the greater is the quantity of hops which it can bear without injury. In general, English brewers employ a much greater quantity of hops than the Scotch brewers. To elucidate the subject, we shall give a few examples of the quantity of hops used in making Edinburgh ale; which is known to be mild, and, in general, is much relished by most of those who are in the habit of drinking ale.

Sixty bushels of malt yielded 11.75 barrels of strong ale wort, measured at the end of the boiling, and 40 pounds of hops had been mixed with it in the boiler.

Forty-seven and a quarter bushels of malt furnished 10.83 barrels of wort, measured after being boiled and cooled, and 36 lbs. of hops had been mixed with it in the boiler.

Sixty bushels of malt furnished fifteen barrels of wort, measured after boiling and cooling, and 45 lbs. of hops had been mixed with it in the boiler.

Sixty bushels of malt, from big, furnished 14.7 barrels of wort, after being boiled and cooled. It was mixed with 40 lbs. of hops in the boiler.

In another brewing in which 72 bushels of malt, from big, furnished 10½ barrels of wort, 66 lbs. of hops had been added in the boiler.

In general, when the ale has considerable strength, the

Edinburgh brewers are in the habit of adding one pound of hops for every bushel of malt employed. Sometimes, indeed, when they wish their ale to be very superior in flavour and quality, they employ a greater quantity of hops than even this. Thus we have seen 100 lbs. of hops boiled in the strong ale wort extracted from 72 bushels of malt. When the ale is but weak, and consequently cheap, the usual allowance is one pound of hops to a bushel and a half of the malt.

3. After the wort has been boiled down to the requisite strength, which, in Edinburgh, is commonly between the specific gravities 1.09 and 1.10, it is let out into the coolers. The coolers are floors of wood, surrounded with a wooden ledge, and water-tight, placed in the most airy and exposed situation in the brewery. They are of such a size as to hold the whole of the wort at a depth not exceeding three or four inches; so that, in large breweries, they are of an enormous extent. The object is to cool down the wort as rapidly as possible to the temperature of the atmosphere; because, if it were allowed to remain long hot it would run the risk of becoming sour, which would spoil the whole process. A great deal of the superiority of some breweries over others depends upon the construction of the coolers, or rather, upon their being as well adapted as possible for reducing the temperature of the wort speedily to that of the atmosphere. A free current of air ought to pass over them, and great care should be taken to keep them perfectly clean.

The wort is either pumped out of the boiler into the coolers, or it is let into them by simply opening a stop-cock, according to the construction of the brew-house. It soon spreads itself over all the surface of the coolers, and a very great evaporation is the consequence. This evaporation ought always to be taken into consideration by the brewer; because it both materially adds to the strength of the ale and diminishes its quantity. The amount of it depends upon the temperature of the air compared with that of the atmosphere, and upon the skill with which the coolers have been constructed. We shall give a few examples of the quantity of evaporation which took place during the cooling of worts, in coolers by no means remarkable for the goodness of their construction.

Temperature of the Wort when let into the Coolers.	Temperature of ditto when cold.	Quantity of Wort when let into the Coolers in Ale Barrels.	Ditto when cooled.	Quantity evaporated in Ale Barrels.	Time of Cooling, in hours.
160°	56°	16.1388	14.8611	1.2777	11½
176	51	18.6666	17.2222	1.4444	11½
208	50	11.5555	8.75	2.8055	9½
208	52	16.6388	12.0832	4.5556	14
208	50	14.0555	10.2222	3.8333	9
208	53	14.7777	10.5	4.2777	16
210	52	13.6944	9.1388	4.5556	8
208	51	13.3333	9.3055	4.0278	8
206	52	12.6388	8.2777	4.3611	6
200	52	14.0555	9.4444	4.6111	6½
200	54	13.6944	9.1388	4.5556	6
200	53	11.0333	8.5000	2.5333	7
204	56	14.0555	10.6111	3.4444	8
Mean		14.1067		3.5640	

Brewing.

In the first two examples in the above table, the quantity of wort was estimated just when it was let down into the coolers; in all the others it was estimated in the boiler before it was pumped out. It appears from the preceding table that rather more than one fourth of the whole wort is dissipated by evaporation during the cooling; and, if we had excepted from the general consideration the first two examples, the proportion evaporated would have been still greater.

When the wort is let out of the boiler into the cooler, the hops still remain, and, as they are soaked with wort, a considerable loss would be sustained if they were thrown away. Thus we found, in one instance, that 45 lbs. of hops retained half a barrel of wort after they were drained so completely that no more wort would drop out. In another case, 35 lbs. of hops retained in the same way 0.3666 of a barrel, which is rather more than one third of a barrel. To recover this wort it is proper to subject the hops to pressure. We do not know whether this is attended to by the great brewers, though it probably is. By several of the Edinburgh brewers it is, we believe, too much neglected.

In cold weather, where the brewery is small, and the apartment in which the fermenting vessels are placed, cold, it is proper not to reduce the temperature of the wort as low as that of the atmosphere. From want of attention to this circumstance, we have seen wort refuse to ferment for some time, and the brewer under the necessity of heating it artificially before fermentation could be brought on. In such cases the wort is very apt to be lost altogether by contracting acidity. The temperature, in such cases, ought not to be reduced lower than 56°. But when the apartment in which fermentation is carried on is warm, 51° or 52° is a very good temperature. When the brewer is obliged to make ale in warm summer weather, it is material to reduce the temperature as low as possible. In such cases great advantage would attend cooling the wort in coolers without any roof or covering whatever, but quite open to the sky; because, in clear nights, the wort might be cooled in this way, eight or ten degrees lower than the temperature of the atmosphere. The reason is obvious. It is owing to the rays of heat, which, in such a case, radiate from the wort, and are not returned again by the clear sky. Wort, being a good radiator of heat, would be particularly benefited by this method of cooling. We have no doubt that it might be put in practice with advantage in hot climates; and that, by means of it, good ale or porter might be manufactured in the East and West Indies. Such a manufacture, if successful, would be particularly relished in India, and would, we doubt not, prove a lucrative article of manufacture to an enterprising man.

While a duty was levied on ale and beer according to their quantity, excisemen were in the habit of gauging the wort while in the boiler and when on the coolers. Not that the duty was levied according to the quantities there found, but to serve as a check upon the more accurate gauges taken in the fermenting tuns. For a certain allowance being made for evaporation while the wort is in the cooler, which the excisemen, from long observation, are enabled to do with some accuracy, they have it in their power, from these checks, to determine whether any of the wort from the coolers has been secreted or carried off with a view to evade the excise laws. In the year 1830 the duty on beer was taken off. The consequence of this is, that the brewer is now entirely freed from the exciseman, and at liberty to improve his processes at pleasure. We doubt not that in a short time this will be followed by considerable improvements in *brewing*.

4. When the wort is sufficiently cooled down by expo-

sure on the coolers, it is let down into the fermenting-tuns, or, as the brewers call them, the gyle-tuns, in order to be fermented; by which process it is converted from the luscious sweet-tasted liquor called *wort*, to the brisk intoxicating liquor which constitutes *ale*. The gyle-tuns are cylindrical wooden vessels, varying in size according to the extent of the brewery. In the London breweries, and in the distilleries, they are of prodigious size; but in private houses they often do not exceed the size of a wine hogshead, or even of a beer barrel. The fermentation is perhaps conducted with the greatest economy in large vessels; but good ale may be made in comparatively small quantities. How far this is the case with porter, it is more difficult to say. Good porter has scarcely ever been made, except by those who manufacture it upon a large scale.

The fermenting tuns are not to be filled by the wort, because a considerable increase in bulk takes place during the fermentation, in consequence of which the liquor would run over, unless allowance were made for it.

The fermentation of ale or beer is never carried to any great length. The object of the brewer is, to retain the flavour and good qualities of the ale or beer, not to develop the greatest quantity of spirits, which can hardly be done without allowing the wort to run into acidity. The violence of the fermentation depends upon the quantity of yeast added. Brewers, accordingly, mix yeast with their worts only in very sparing quantities, while the distiller adds it in great doses, and repeatedly.

Yeast is a frothy substance, of a brownish-grey colour and bitter taste, which is formed on the surface of ale or wine while fermenting. If it be put into sacks the moisture gradually drops out, and the yeast remains behind in a solid form. It has very much of the flavour and taste of cheese when in this state; but its colour is still darker. This dried yeast promotes or excites fermentation, but it does not answer quite so well as fresh yeast. At one period some of the Scotch distillers employed considerable quantities of it; but all of them with whom we conversed on the subject affirmed that it was much less profitable than even the bad porter yeast which they were in the habit of bringing down from London. From the resemblance which dried yeast has to cheese, one would be disposed to infer that it is a species or variety of gluten. But if we attempt to induce fermentation in wort by adding the gluten of wheat, we will be unsuccessful.

When yeast is kept for some time in cylindrical glass vessels, a white substance, not unlike curd, separates and swims on the surface. If this substance be removed, the yeast loses the property of exciting fermentation. This white substance possesses many of the properties of gluten, though it differs from it in others. Its colour is much whiter, it has not the same elasticity, and its particles do not adhere with the same force. In short, it agrees much more nearly, in its properties, with the curd of milk than with the gluten of wheat. We are disposed to consider this substance as the true fermenting principle in yeast, though we were never able to procure a sufficient quantity of it to put its fermenting powers to the test of experiment. We have sometimes seen a similar substance separate in the fermenting tuns in distilleries, when the fermentation was nearly at an end; or, rather, when such a quantity of spirit had been generated as put an end to the fermenting process altogether. But we could never learn that the distillers had formed any opinion respecting this curdy substance. It did not interfere with the success of their operations, and, on that account, they bestowed little attention on it. We attempted, once or twice, to collect such a quantity of it as might enable us to try its powers as a ferment, but we did not succeed.

The only chemist who has attempted to subject yeast to a chemical analysis is Westrumb; but, though this philosopher was distinguished for his accuracy, the task was too difficult for the resources of the science of the time (1796) when he published his *Experiments*. From 15,360 parts of fresh beer yeast he obtained the following substances:—

Potash.....	13
Carbonic acid.....	15
Acetic acid.....	10
Malic acid.....	45
Lime.....	69
Alcohol.....	240
Extractive.....	120
Mucilage.....	240
Saccharine matter.....	315
Gluten.....	480
Water.....	13,595
	15,142
Loss.....	218
Total.....	15,360

As yeast may be reduced to a dried state without depriving it of the power of acting as a ferment, it is clear that the carbonic acid, acetic acid, alcohol, and water, are not essential to it. We cannot suppose that either potash, lime, or malic acid, is essential. The saccharine matter, we know, is capable of fermenting of itself; but if it were the essential ingredient, it would be quite unnecessary to add yeast to wort at all, as we know that the wort contains abundance of saccharine matter in solution. We know likewise, from experiment, that neither extractive, mucilage, nor gluten, possesses the property of exciting fermentation. Thus none of the substances found by Westrumb in yeast can be considered as the true fermenting principle. Dobereiner found, that when yeast is steeped in alcohol, it loses the property of acting as a ferment. This may be owing to the alcohol dissolving and carrying off the true fermenting principle. But we are rather disposed to ascribe it to the presence of a portion of alcohol in the yeast. We know that a certain portion of alcohol destroys fermentation. Thus we have found, by a great many trials, conducted on rather a large scale, that the stronger a wort is made, the greater is the quantity of unaltered saccharine matter which remains in it after the fermentation has been carried to the greatest possible length. Hence the present mode of levying the duties on spirits upon the wash is not only very injurious to the goodness of the spirits manufactured, but is attended with a positive and very heavy loss to the community. Distiller's wash may be fermented a second time, and would in this way yield a considerable additional quantity of spirits. We have frequently seen it made into good small beer. The proper mode of levying the duty would be on the quantity of saccharine matter in the wash. This might easily be determined by a good saccharometer. A certain part of the duty might likewise be levied upon the spirits produced. This would act as a sort of check upon the first estimate, and would considerably diminish the risk of fraud. Indeed, the mode of determining the duty by the quantity of saccharine matter would not be more liable to evasion than the present mode. It could be evaded in no other way than by concealing a portion of the wash, which would be equally efficacious according to the present mode.

We conceive, therefore, that when yeast is mixed with alcohol, it may retain so much of that liquor as to prevent it from acting as a ferment. When we attempt to wash away the alcohol, we may destroy the yeast by washing

away that portion of it which really acts as a ferment, which is probably small in quantity.

It seems to us not unlikely, that the portion of yeast which really acts as a ferment is a quantity of saccharine matter which it contains, that has begun to undergo the decomposition produced by fermentation, but has not yet completed the change. For nothing more seems to be necessary than to begin the fermentative process in wort; the process then goes on of itself. It would be curious to know whether a high temperature (96° or 100°) might be substituted in distilleries for the great quantities of yeast at present employed. We believe that the reason why such great quantities of yeast are necessary in distilleries, is the very great strength of the wash employed; as they are obliged by law to produce a quantity of proof spirits amounting nearly to one fifth of the whole bulk of the wash. Nothing can be more preposterous than such a method, nor more contrary to the real interest of the community, which obviously must be to produce the greatest quantity of good spirits from a given quantity of grain.

The quantity of yeast mixed with the wort in the fermenting tuns by brewers is very small, amounting, at an average, to a gallon of yeast for every three barrels of wort. The following table will give the reader an idea of the quantities of yeast really mixed by the Edinburgh brewers with their strong ale worts in different brewings. It is obvious, however, that the quantity of yeast must be regulated in some measure by its goodness.

Quantity of Wort in Barrels.	Specific Gravity.	Lbs. per Barrel of Saccharine Matter.	Quantity of Yeast added in Gallons.
10-611	1-106	99	3-5
10-83	1-104	97 $\frac{1}{4}$	4
14-944	1-096	89 $\frac{1}{2}$	2-5
14-8055	1-093	86 $\frac{3}{4}$	3-75
14-6388	1-093	86 $\frac{3}{4}$	2-83
14-722	1-082	76 $\frac{1}{2}$	2-83
10-201	1-091	86 $\frac{1}{4}$	1
9-75	1-091	86 $\frac{1}{4}$	1
11-478	1-098	91 $\frac{1}{2}$	1
9-25	1-096	89-67	1

The last four brewings, in which the quantity of yeast added was smaller than in the first six, took place during the month of May, when the heat is apt to make the fermentation run to excess. The variation in the quantity, so conspicuous in the first six brewings, is partly to be ascribed to differences in the goodness of the yeast, but chiefly to the carelessness and want of method which distinguished the brewer in question beyond any one we ever met. But we have taken his quantities to show that differences in the quantity of yeast are not material; for all the preceding brewings, except the first, furnished very good ale. The wort in the first brewing had been cooled too much; the consequence was, that it fermented very badly, and finally ran into acidity.

Soon after the yeast has been mixed with the wort, an intestine motion begins to appear in the liquid; air

Brewing.

bubbles separate from it, and a froth collects slowly upon the surface. This froth is of a yellowish gray colour. At first it has the appearance of cream; but in a few days it collects in considerable quantities, especially if the weather be warm. At the same time the temperature of the wort increases, and a very considerable quantity of carbonic acid gas is given out by it. The increase of temperature which takes place during the fermenting of ale may be stated, at an average, to amount to 12° or 15°. Sometimes it amounts to 20°, and sometimes does not exceed 5°. But in such cases there is generally some fault in the skill of the brewer. But the following table, exhibiting the highest temperatures of different ales during their fermentation, will satisfy the reader of these changes of temperature better than any general explanation:

Quantity of Wort fermented in two Tuns. In Barrels.	Date at which it was let into the fermenting Tuns.	Temperature at that time.	Temperature when at the highest point of Fermentation.	Date at which this Temperature took place.	Strength of Wort when let into fermenting Tuns, in lbs. per Barrel.	Quantity of Yeast added in Gallons.
10-83	March 10.	50°	63°	March 17.	88-75	4
14-944 in 1 tun.	March 17.	55	61	March 21.	85-62	2½
14-8055	March 24.	46	68	April 2.	78-125	3½
14-6388 in 1 tun.	March 29.	57	70	April 2.	80-625	2-83
14-722	March 31.	56	71	April 3.	73-75	2-83
17-43 in 1 tun.	April 4.	51	64	April 10.	65-00	2-83
8-72 in 1 tun.	April 6.	50	65	April 13.	93-75	3½

We shall now give some examples of the change of temperature by fermentation, when the brewings were conducted in summer, and of course assisted by the heat of the weather.

Quantity of Wort fermented in Barrels.	Date of letting it into the fermenting Tun.	Temperature at that time.	Temperature when at highest.	Date of ditto.	Strength of Wort in lbs. per Barrel.	Yeast used in Gallons.
9-75	May 24.	51°	71°	May 30.	95-93	1
11-4782	May 28.	49	72	June 2.	91-56	1
9-25	May 31.	46	67	June 6.	89-37	1
10-2777	June 4.	46	67½	June 13.	105-82	1
10-5	June 7.	44	71	June 15.	102-187	1
10-2222	June 11.	55	82	June 15.	110-0	1
10-694	June 18.	53	80	June 24.	96-4	1
13-5	June 21.	53	67½	June 25.	61-25	1

We shall likewise give the result of two brewings with raw grain made also during summer.

Quantity of Wort fermented in Barrels.	Date of letting it into the fermenting Tun.	Temperature at that time.	Temperature when at highest.	Date of ditto.	Strength of Wort in lbs. per Barrel.	Yeast used in Gallons.
10-5555	June 26.	48°	62°	July 1.	56-25	1
14-3055	July 6.	58	68	July 8.	72-5	1½

From the preceding tables we see that the length of time which elapses before the fermentation reaches its acme, supposing this to be measured by the temperature, varies very considerably. The shortest interval in the table is three days, and the longest nine days; the average of the whole is very nearly six days, which is exactly the mean between the longest and the shortest times. If the reader will glance his eye over the tables, he will perceive that, in general, the higher the temperature of the wort is when let down into the fermenting tuns, the more rapidly does the fermentation come on. As the worts were cooled by exposure to the greatest cold of the night, and as the coolers were screened from the radiation of heat, the temperatures given to the third column of the preceding tables may be considered as measuring very nearly the greatest degree of cold which took place in Edinburgh at the dates contained in the second column. It follows, as might have been expected, that the warmer the weather the more rapid is the fermentation. And hence the advantage of letting down the worts rather warm in cold weather, and cooling them down as much as possible in warm weather. For this purpose we cannot too much recommend coolers which can occasionally be uncovered altogether, and exposed to the unclouded sky. A roof, perhaps, might be contrived, composed of very light materials, which might be easily slid off, or which might turn upon a pivot. For a roof would be occasionally necessary to screen the worts from rain. In warm weather, brewing should be confined to clear and unclouded days, when the cooling process could be carried farthest of all. We have little doubt that wort might easily be cooled down to the freezing point, if requisite, in our warmest summer weather.

Little can be said about the length of time during which the fermentation of the ale lasts, because it varies very much according to the heat of the weather, and the degree to which the wort has been cooled down. The following table will give some idea of the length of time which elapsed during the fermentations contained in the preceding tables:

FIRST TABLE.

1st.....	8 days.
2d.....	10
3d.....	10
4th.....	8
5th.....	9
6th.....	9
7th.....	10

SECOND TABLE.

1st.....	6 days.
2d.....	8
3d.....	9
4th.....	15
5th.....	10
6th.....	7
7th.....	7
8th.....	7

THIRD TABLE.

1st..... 9 days.
2d..... 5

Brewing.
Theory of
fermenta-
tion

The theory of fermentation has occupied the attention of chemists ever since the manufacture of ale began to be attended to by men of science, but it is only of late that much light has been thrown upon the subject. Lavoisier was the first person who attempted to give any thing like a theory of this intricate process. He attempted to determine the composition of common sugar, a substance which may be fermented just as well as the soluble part of malt, and which yields similar products. He endeavoured, likewise, to determine the constituents of alcohol, the substance formed by fermentation. With these data, and with a knowledge of the composition of water and carbonic acid, he formed a plausible theory, which was valuable as a first approximation, though there can be little doubt that it was erroneous in every particular. Since that time, several experiments on the subject have been made by Thenard. Guy-Lussac and Thenard, and Berzelius, have determined the constituents of sugar with much care; and Theodore de Saussure has made very elaborate, and we believe accurate, experiments on the composition of alcohol. These facts will enable us to form a conception of what takes place during fermentation. We shall first state the general theory, as resulting from experiments on common sugar, and then give some experiments which we ourselves have made on the saccharine matter of malt.

If a weak solution of sugar in water be kept in a warm place, it will ferment of itself, and be converted into a spirituous liquor. This we have tried more than once, and always successfully, provided the weather was warm. A solution of sugar of grapes in water ferments still more speedily. This is said likewise to be the case with sugar of starch, and, of course, with the saccharine matter of malt. In our general view of fermentation, then, we may leave out of view the small quantity of yeast; because it is not absolutely necessary, but seems merely to render the effect more rapid, and consequently prevent the change of the liquid into acidity, which almost always takes place when the fermentation is slow.

When the fermentation is complete, the sugar disappears altogether, and two new substances are found in its place, namely, carbonic acid and alcohol. All that happens, then, is the resolution of sugar into the two new substances, carbonic acid and alcohol. It is requisite to know how much of each of these substances is formed from a given weight of sugar.

According to Lavoisier's experiments, 100 parts of sugar yielded, when fermented,

Alcohol.....57.70
Carbonic acid.....35.34

He does not give us the specific gravity of his alcohol, but it could scarcely be less than 0.825; for when his experiments were made, alcohol of greater strength was scarcely known. Now, such alcohol contains at least 11 per cent. of water, for that quantity has been actually extracted from it. From Saussure's experiments, it is probable that the real quantity of water contained in alcohol of the specific gravity 0.825, is 18.387 per cent. or almost a fifth. On this supposition sugar, according to Lavoisier's experiments, yields

Alcohol.....47.1
Carbonic acid.....35.34
82.44

or, per cent.

Alcohol.....57.1
Carbonic acid.....42.9
100.0

Thenard mixed 60 parts of yeast with 300 parts of sugar, and fermented the mixture at the temperature of 59°. He informs us that, in four or five days, all the saccharine matter had disappeared. The quantity of carbonic acid evolved amounted by weight to 94.6 parts. It was perfectly pure, being completely absorbed by water. The fermented liquid being distilled, yielded 171.5 parts of alcohol of the specific gravity 0.822. When the residue of the distillation was evaporated, 12 parts of a nauseous acid substance remained, and 40 parts of the yeast still continued unaltered in appearance, though Thenard assures us that it had lost the whole of its azote. Thus the products of the fermentations were,

Alcohol of 0.822.....171.5
Carbonic acid.....94.6
Nauseous residue.....12.0
Residual yeast.....40.0
318.1
Loss.....41.9
Total.....360.0

But as the nauseous residue and residual yeast nearly make up the quantity of yeast employed, let us consider only the products of decomposed sugar, supposing the loss to be proportionally divided between the carbonic acid and alcohol. Now, alcohol of the specific gravity 0.822 contains one tenth of its weight of water, which can be separated from it; and if we suppose, with Saussure, that absolute alcohol contains 8.3 per cent of water, then the products of sugar decomposed by fermentation, according to Saussure's experiments, are as follows:

Alcohol.....47.70
Carbonic acid.....35.34
83.04

or, in 100 parts,

Alcohol.....57.44
Carbonic acid.....42.56
100.00

This result approaches so nearly that of Lavoisier, that there is reason to suspect that the coincidence is more than accidental.

According to the experiments of Thenard and Guy-Lussac, sugar is composed of

Carbon.....42.47
Oxygen and hydrogen in the same proportion
as in water.....57.53
100.00

According to one analysis of Berzelius it is composed of

Hydrogen.....6.802
Carbon.....44.115
Oxygen.....49.083
100.000

and, according to another, of

Hydrogen.....6.891
Carbon.....42.704
Oxygen.....50.405
100.000

Alcohol, according to the analysis of Saussure, is composed of

Hydrogen.....13.70 or 3 atoms.
Carbon.....51.98 or 2 atoms.
Oxygen.....34.32 or 1 atom.
100.00

And carbonic acid is composed of

Carbon.....27.3 or 1 atom.
Oxygen.....72.7 or 2 atoms.

Hence it is obvious that sugar can be resolved into alcohol and carbonic acid only, on the supposition that it contains three atoms of oxygen, three atoms of carbon, and

Brewing. three atoms of hydrogen ; proportions which do not accord with any of the analyses stated above. Supposing its composition to be so, the weight of each of the constituents per cent. is as follows :

Hydrogen	6.66
Carbon	40.03
Oxygen.....	53.31
	100.00

On this supposition an integrant particle of sugar contains nine atoms, namely, three of oxygen, three of carbon, and three of hydrogen ; which are capable of arranging themselves differently, so as to form an integrant particle of alcohol containing six atoms, and an integrant particle of carbonic acid containing three atoms.

An integrant particle of sugar is composed of

	Oxygen. 3 Atoms.	Carbon. 3 Atoms.	Hydrogen. 3 Atoms.
A particle of alcohol of.....	1	2	3
A particle of carbonic acid of..	2	1	0
	3	3	3

The weight of a particle of alcohol is.....2.877

The weight of a particle of carbonic acid.....2.751

According to these numbers, 100 parts of sugar ought by fermentation to be decomposed into

Alcohol.....	50.76
Carbonic acid.....	49.24
	100.00

or it ought to form very nearly equal weights of each of these constituents.

This explanation of fermentation, though in some points hypothetical, must be admitted to approach pretty near the experiments made upon the subject. These experiments are attended with so much difficulty, that rigid accuracy cannot be expected. In all likelihood, we can never arrive at the truth by any other method than that which we have followed upon this occasion. Nor will this method be any longer doubtful, as soon as it is ascertained with precision that sugar can be resolved into alcohol and carbonic acid, and as soon as we know the proportions of the two substances evolved. We conceive that both Lavoisier and Thenard have stated the quantity of carbonic acid too low, from not being aware that the whole of the sugar is never decomposed by fermentation. This we conclude from some experiments of our own, made on a large scale, of which we shall now proceed to give an account.

Nine different brewings of pure malt were made. The worts were weak, and they were fermented as strongly as possible by means of large quantities of yeast, added at intervals, as is practised by the distillers. The following table exhibits the specific gravity of these worts before and after the fermentation was over :

Specific gravity of the wort.	Specific gravity of ditto after fermentation.
1.040	1.0014
1.056	1.0016
1.050	1.000
1.0492.....	1.0012
1.0465.....	1.0045
1.045	1.0047
1.0465.....	1.0007
1.051	1.0007
1.0524.....	1.0004

From this table we see that only one of the worts was reduced by fermentation so low as the specific gravity of pure water. As a good deal of alcohol was evolved in each by the fermentation, it is obvious that they must have all contained a certain portion of saccharine matter undecomposed, notwithstanding the violence of the fermentation, which elevated the temperature of the worts more than 50 degrees. On evaporating a portion of the worts of each of

these brewings, we obtained a quantity of undecomposed saccharine matter, which amounted, at an average, to one fifth of the quantity originally present. At first they contained, on an average, 45 lbs. per barrel of saccharine matter. The *spent wash*, after distillation, contained still 9 lbs. per barrel. This liquor was capable of being fermented a second time, and of yielding more spirits.

But as these worts were very weak, and as they were fermented in very advantageous circumstances, and in much greater quantities than either Lavoisier or Thenard could have employed in their experiments, we do not conceive that more than four fifths of the sugar which they employed in their experiments could have been decomposed. Now, if to the carbonic acid actually developed in their trials we add a fifth part, the number will approach very nearly to the one which we have deduced from the supposition that sugar is decomposed by fermentation into an integrant part of alcohol and an integrant part of carbonic acid.

On comparing the quantity of alcohol of 0.825 obtained in our experiments from the quantity of saccharine matter actually decomposed by fermentation, the result was, that 100 parts of saccharine matter yielded almost exactly 50 parts of such alcohol. This would amount to about 40.9 parts of real alcohol. There can be no doubt that a portion of the alcohol was lost during the distillation, which was conducted in the rapid way followed some years ago by the distillers in Scotland. If we suppose one fifth to have been lost, which is probably not much beyond the truth, the real produce of alcohol from the saccharine matter of malt would be almost exactly one half of its weight, which it ought to be, according to the preceding supposition, that it is decomposed into alcohol and carbonic acid.

When the fermentation is languid, it is customary to beat in the yeast which has collected on the top ; that is to say, the whole is stirred till the wort and yeast are thoroughly mixed.

5. The last step of the process of brewing is called *Cleansing*. When the violence of the fermentation is over, the head of yeast which covers the top of the fermenting tun diminishes in height by the gradual escape of the carbonic acid gas, which heaved it into bubbles. If the wort were allowed to remain in the gyle-tun after this has happened, the yeast would again mix with it ; and the consequence would be a disagreeable bitter taste, known among brewers by the name of *yeast bitter*. The fermentation would likewise continue, though in a languid manner, and the ale would soon run into acidity. These accidents are prevented by drawing off the ale into small casks. And this is called *cleansing*. The casks are filled quite full, and left with their bungs open. The drawing off of the ale from the gyle-tun lowers its temperature, and, of course, checks the fermentation. On this account the cleansing is sometimes practised in summer, when the elevation of temperature in the wort is at its height.

We have repeatedly observed a curious circumstance during the cleansing, not very easily accounted for. If we take the temperature of the ale at the upper surface of the gyle-tun, and then observe the temperature of the ale when it flows from the stop-cock at the bottom of the tun, we shall generally find it one or two degrees hotter in this latter place than at the former. We ought naturally to expect the highest temperature at the top of the gyle-tun.

The ale still continues to ferment after it is put into the small casks ; but as these casks are always kept full, the yeast, as it comes to the surface, flows out at the bung, and thus separates altogether from the beer. It is this separation that has induced brewers to distinguish it by the name of *cleansing*. In these casks, then, the yeast divides itself into two portions. The greatest part rises

Brewing. up with the carbonic acid evolved, and flows out at the bung-hole; while another portion subsides to the bottom, and constitutes what is called the dregs of the beer. It is essential to the cleansing that the casks should be always full, otherwise the yeast will not run off, and the beer will not become transparent. This object is accomplished in small breweries by a man constantly going round, and filling up the casks as they *work down*. But in the London breweries there is an ingenious mechanical contrivance which answers the purpose perfectly.

When the fermentation has subsided, the beer will in general be found transparent. It is bunged up in the casks and preserved for sale; or in London, where the quantity is too great for this, the beer is removed into

large stone vats, capable of holding several thousand barrels, from which it is gradually distributed to the consumers.

In London, where the beer is usually sent to the public-houses as soon as the fermentation is over, and before it has had time to become fine, it is usual to send along with it a quantity of *finings*, as it is called; that is, a solution of isinglass in weak sour beer, made from a fourth mash of the same malt. The publican puts a certain quantity of this into every cask. It forms a kind of web at the surface of the liquid; and, gradually sinking to the bottom, carries with it all the flocculent matter, and leaves the beer transparent.

We shall terminate this chapter with a table exhibiting Tables of the results obtained by brewing with malt made from a considerable number of different varieties of barley and big.

GRAIN. <i>First Quality.</i>	Weight per Bushel. lbs.	Bushels of Malt used.	Weight of Malt per Bushel. lbs.	Wort in Barrels.	Specific Gravity of Worts.	Lbs. per Barrel of Dry Ex- tract.	Total Quantity of Dry Extract.	Solid Ex- tract from a Bushel of Malt in lbs. Avoirdupois.	Solid Ex- tract from a Bushel of Raw Grain.	Solid Ex- tract from 1 lb. of Raw Grain.
ENGLISH.										
Norfolk.....	50.375	60	36.58	{ 10.611 7.305	{ 1.106 1.039	{ 99.2 35.25	{ 1364.89	{ 22.748	{ 24.91	{ 0.4485
Norfolk.....	50.375	47.5	36.58	{ 11.131 9.176	{ 1.104 1.103	{ 97.25 101	{ 1071.36	{ 22.588	{ 24.70	{ 0.4843
Norfolk.....	50.375	55	36.58	{ 9.166 14.77	{ 1.029 1.084	{ 25.5 78.125	{ 1153.23	{ 20.976	{ 22.96	{ 0.4563
Norfolk.....	50.375	60	38.4	{ 7.972 8.566	{ 1.106 1.030	{ 99.06 26.56	{ 1368	{ 22.8	{ 23.84	{ 0.4733
Norfolk.....	50.375	55	38.4	{ 3.38 10.583	{ 1.014 1.1197	{ 11.25 112.5	{ 1220.7	{ 22.19	{ 23.20	{ 0.4406
Suffolk.....	50.508	72	40.56	{ 8.527 3.55	{ 1.044 1.0124	{ 40.6 10.0	{ 1798.46	{ 24.98	{ 25.39	{ 0.5027
Kent.....	49.750	60	34.88	{ 10.733 7.417	{ 1.104 1.033	{ 97.25 29.25	{ 1325.84	{ 22.095	{ 24.58	{ 0.4941
Kent.....	49.914	50	35.76	{ 4.465 8.954	{ 1.018 1.106	{ 14.75 99.2	{ 1139.52	{ 22.79	{ 24.22	{ 0.4863
Kent.....	49.032	81.875	35.44	{ 7.305 2.717 11.488	{ 1.032 1.019 1.117	{ 28.25 15.5 110	{ 2037.86	{ 24.889	{ 27.06	{ 0.5431
Average...	50.208		37.02	{ 16.222 2.673	{ 1.049 1.008	{ 45.25 6.5		22.894	24.54	0.4803
SCOTCH.										
Haddington.....	52.190	60	38.06	{ 15.456 12.603	{ 1.105 1.104	{ 98.25 97.25	{ 1510.78	{ 25.199	{ 27.46	{ 0.5262
Haddington.....	52.190	72	39.18	{ 12.944 14.5	{ 1.040 1.092	{ 36.25 85.94	{ 1717.74	{ 23.857	{ 24.59	{ 0.4712
Haddington & Berwick.....	53.094	60	39	{ 8.0 8.16	{ 1.113 1.027	{ 106.25 27.5	{ 1475	{ 24.580	{ 24.73	{ 0.4915
Haddington & Berwick.....	53.094	54	39.6	{ 11.995 10.722	{ 1.106 1.033	{ 99.2 24.6	{ 1328	{ 24.6	{ 24.75	{ 0.4919
Edinburgh.....	52.164	60	41.92	{ 10.264 2.926	{ 1.111 1.011	{ 104 8.8	{ 1525.93	{ 25.432	{ 25.08	{ 0.4808
Edinburgh.....	52.164	60	42.26	{ 10.264 9.528	{ 1.111 1.044	{ 104 40.4	{ 1490.8	{ 24.846	{ 25.51	{ 0.4890
Edinburgh.....	52.164	79.125	41	{ 1.807 11.324	{ 1.013 1.121	{ 10.5 113.5	{ 1945.58	{ 24.588	{ 25.25	{ 0.4841
Fife.....	51.539	72	38.8	{ 16.222 2.69	{ 1.042 1.009	{ 38.12 7.25	{ 1756.24	{ 24.39	{ 24.39	{ 0.4732
Fife.....	51.539	72	38.8	{ 13.033 7.944	{ 1.1055 1.028	{ 98.5 24.37	{ 1784	{ 24.78	{ 24.78	{ 0.4808
Fife.....	51.539	72	38.8	{ 4.138 13.252	{ 1.0075 1.101	{ 5.02 94.37				
Average...	52.237		38.8	{ 8.5 6.235	{ 1.029 1.0062	{ 26.56 5		24.696	25.17	0.4876

GRAIN. <i>First Quality.</i>	Weight per Bushel. lbs.	Bushels of Malt used.	Weight of Malt per Bushel. lbs.	Wort in Barrels.	Specific Gravity of Worts.	Lbs. per Barrel of Dry Ex- tract.	Total Quantity of Dry Extract.	Solid Ex- tract from a Bushel of Malt in lbs. Avoirdu- pois.	Solid Ex- tract from a Bushel of Raw Grain.	Solid Ex- tract from 1 lb. of Raw Grain.
<i>Big.</i>										
Lanark.....	48.562	60	36.44	15.3	1.090	84	1282.16	21.369	22.08	0.4547
Lanark.....	48.562	72	36.44	10.9	1.116	109	1625.63	22.578	23.33	0.4804
				11.667	1.040	36.25				
				8.971	1.111	104				
Perth.....	47.854	72	34.44	9.055	1.057	53	1511.01	20.986	21.60	0.4447
				3.47	1.016	13				
				12.094	1.121	113.5				
Perth.....	48.562	80	37.57	13.686	1.048	44.25	2011.38	25.142	24.90	0.5128
				12.672	1.011	8.8				
				9.809	1.103	96.4				
Perth.....	48.562	60	36.53	10.361	1.034	30.25	1285.39	21.423	20.87	0.4297
				2.455	1.011	8.8				
				18.00	1.115	108.43				
Aberdeen.....	48.562	72	36.03	9.223	1.040	35.25	1678.61	23.310	23.14	0.4765
				6.236	1.0075	5.93				
				14.00	1.112	105				
Aberdeen.....	48.562	72	36.03	8.25	1.0307	35.92	1650.74	22.95	22.76	0.4686
				6.24	1.006	5.45				
Dumfries	47.000	60	36.01	14.75	1.069	64.37	1299.84	21.66	21.14	0.4498
Average...	48.278		36.28					22.424	22.47	0.4646
<i>Second Quality.</i> ENGLISH.										
Norfolk.....	50.57	60	38.437	18.135	1.072	67	1234.95	20.583	22.475	0.4444
				10.874	1.106	99.2				
Norfolk.....	50.57	70	38.437	10.000	1.041	37.25	1489.92	21.284	23.241	0.4506
				13.694	1.081	75.51				
Norfolk.....	51	50	37.562	7.722	1.105	98.75	1181.99	23.64	24.552	0.4814
				7.83	1.0325	29				
Norfolk.....	51	52	37.562	4.73	1.0167	13.44	1144.13	22.002	22.852	0.4481
				8.79	1.071	65.93				
Norfolk.....	51	50	37.562	4.87	1.036	32.6	1111.03	22.221	23.078	0.4525
				8.30	1.004	3.44				
				10.527	1.104	97.5				
Kent.....	49.945	76	36.875	8.125	1.043	40	1624.10	21.370	22.504	0.4506
				4.013	1.012	9.37				
Average.....	50.680							21.849	23.117	0.4561
SCOTCH.										
Haddington.....	52.265	72	37.298	11.378	1.111	104	1560.06	21.667	22.359	0.4278
				13.000	1.032	28.25				
Haddington.....	52.265	60	37.298	15.206	1.093	86.8	1319.84	21.997	22.699	0.4343
Haddington & Berwick.....	50.531	60	38.501	15	1.088	81.88	1435.15	23.920	24.146	0.4778
				4.75	1.0125	10				
Haddington & Berwick.....	50.531	64	38.501	10.55	1.107	100.6	1376.55	21.510	21.831	0.4320
				8.22	1.030	26.87				
				0.722	1.017	14.6				
Fife.....	48.508	72	40.036	11.429	1.111	193.75	1770.96	24.600	23.137	0.4770
				7.25	1.054	50.62				
				7.25	1.0078	6.25				
Average.....			38.327					22.739	22.834	0.4498

GRAIN. <i>Second Quality.</i>	Weight per Bushel. lbs.	Bushels of Malt used.	Weight of Malt per Bushel. lbs.	Wort in Barrels.	Specific Gravity of Worts.	Lbs. per Barrel of Dry Ex- tract.	Total Quantity of Dry Extract.	Solid Ex- tract from a Bushel of Malt in lbs. Avoirdu- pois.	Solid Ex- tract from a Bushel of Raw Grain.	Solid Ex- tract from 1 lb. of Raw Grain.
<i>Big.</i>										
Kirkcudbright...	46·875	60	36·40	15·621	1·082	76·4	1210·62	20·177	20·428	0·4358
Kirkcudbright...	46·875	72	36·40	{ 9·934 9·611 13·388 4·138	{ 1·109 1·047 1·075 1·011	{ 102 43·25 70 9·37	{ 1441·37 1062·66	{ 20·019 21·253	{ 20·268 21·483	{ 0·4324 0·4481
Ayr	47·937	50	37·83	{ 14·5 10·694 11·111	{ 1·105 1·041 1·1028	{ 98·44 37·5 95·9	{ 2111·22 1565·06	{ 21·543 21·737	{ 21·560 20·552	{ 0·4497 0·4337
Angus	47·392	72	38·57	{ 7·277 10·083	{ 1·006	{ 5				
Average	47·403		37·40					20·946	20·858	0·4399
<i>Third Quality. ENGLISH.</i>										
Norfolk	51·937	72	36·683	{ 10·262 14·528 10·484 11·722 2·986	{ 1·107 1·040 1·104 1·043 1·012	{ 100 36·5 97·25 39·25 9·75	{ 1587·24 1519·95	{ 22·045 21·11	{ 23·457 22·463	{ 0·4516 0·4325
Norfolk	51·937	72	36·683	{ 14·33 7·61 14·333	{ 1·094 1·035 1·092	{ 87·5 28·75 86·25	{ 1676·85 1732·36	{ 22·064 22·794	{ 23·056 23·820	{ 0·4570 0·4614
Norfolk	51·625	76	37·61	{ 6·25 7·1 11·717	{ 1·0477 1·0098 1·111	{ 44 7·8 104	{ 1732·36 1536·88	{ 22·794 21·955	{ 23·820 23·236	{ 0·4614 0·4799
Essex	47·633	70	35·125	{ 12·118 2·085 11·472	{ 1·028 1·010 1·099	{ 24·3 8 92·5	{ 1536·88 1540·3	{ 21·955 21·393	{ 23·236 21·848	{ 0·4799 0·4551
Essex	48·000	72	35·656	{ 7·805 10·083	{ 1·036 1·507	{ 32·8 5·9				
Average	50·459		36·561					21·893	22·980	0·4562
<i>SCOTCH.</i>										
Haddington	48·969	72	36·816	{ 10·123 8·028 3·441 10·012	{ 1·103 1·047 1·021 1·112	{ 96·4 43·25 17·4 105	{ 1390·45 1647·03	{ 19·311 23·014	{ 19·617 23·378	{ 0·4006 0·4774
Haddington	48·969	72	36·816	{ 8·916 0·995 14·000	{ 1·071 1·011 1·086	{ 66 9 80	{ 1647·03 1490·51	{ 23·014 20·602	{ 23·378 20·233	{ 0·4774 0·4141
Berwick	48·854	72	37·312	{ 5·916 4·75	{ 1·039 1·0088	{ 35·3 6·9				
Average	48·930		36·98					20·976	21·076	0·4307
<i>Big.</i>										
Kirkcudbright...	44·722	67·75	35·031	{ 13·083 6·25 8·472 13·048 5·125 10·083	{ 1·1067 1·037 1·0047 1·0865 1·004	{ 99·68 33·43 3·75 80·625 3·12	{ 1481·78 1306·86	{ 21·871 19·219	{ 20·688 18·161	{ 0·4621 0·4061
Average	44·722		35·031					20·545	19·414	0·4341

Difference
between
beer and
ale.

Porter.

The English word *ale* is obviously the same with the Swedish word *öl*, which is applied to the same kind of fermented liquor; while the word *beer* is synonymous with the German word *bier*. These two words in Great Britain are applied to two liquors obtained by fermentation from the malt of barley; but they differ from each other in several particulars. Ale is light-coloured, brisk, and sweetish, or at least free from bitter; while beer is dark-coloured, bitter, and much less brisk. What is called *porter* in England is a species of beer, and the term *porter* at present signifies what was formerly called *strong beer*. The original difference between these two liquids was owing to the malt from which they were prepared. Ale malt was dried at a very low heat, and consequently was of a pale colour; while beer or porter malt was dried at a higher temperature, and had of consequence acquired a brown colour. This insipient charring had developed a peculiar and agreeable bitter taste, which was communicated to the beer along with the dark colour. This bitter taste rendered beer more agreeable to the palate, and less injurious to the constitution, than ale. It was consequently manufactured in greater quantities, and soon became the common drink of the lower ranks in England. When malt became high priced in consequence of the heavy taxes laid upon it, and the great increase in the price of barley which took place during the war of the French revolution, the brewers found out that a greater quantity of wort of a given strength could be prepared from pale malt than from brown malt. The consequence was, that pale malt was substituted for brown malt in the brewing of porter and beer. We do not mean that the whole malt employed was pale, but a considerable proportion of it. The wort of course was much paler than before, and it wanted that agreeable bitter flavour which characterized porter, and made it so much relished by most palates. The porter brewers endeavoured to remedy these defects by several artificial additions. They prepared an artificial colouring matter, by heating a solution of coarse sugar in an iron boiler till it became black, and was reduced to the consistency of treacle. The smoke issuing from it was then set on fire, and the whole was allowed to burn for about ten minutes, when the flame was extinguished by putting a lid on the vessel. This substance was mixed with a certain quantity of water before it was cold. The porter is coloured by adding about two pounds of this colouring matter for every barrel of wort while in the gyle-tun. Some brewers make their colouring matter with infusion of malt instead of sugar; and in 1809 M. de Roche took out a patent for preparing the colouring matter from the husks of malt, by burning them like coffee, and then infusing them in water. We believe that all these colouring matters are of the same nature; of course the brewer ought to employ that one of them which is cheapest.

To supply the place of the agreeable bitter which was communicated to porter by the use of brown malt, various substitutes were tried. Quassia, cocculus indicus, and we believe even opium, were employed in succession; but none of them were found to answer the purpose sufficiently. Whether the use of these substances be still persevered in we do not know, but we rather believe that they are not, at least by the London porter brewers.

It was this change in the use of the malt which occasioned the great falling off in the London porter, which has been so much complained of, and ascribed to so many causes. We do not believe that the schemes of Mr Jack-

son, of notorious memory, though they enriched himself, produced the injurious effects upon the London breweries that have been ascribed to them. This man, whose character was notorious, kept an apothecary's shop on Tower-Hill; and speculating on the means of amassing a speedy fortune, he hit upon the idea of brewing beer from various drugs instead of malt and hops. But instead of commencing practical brewer himself, he struck out the more profitable trade of teaching his process to the London brewers. Mrs Piozzi informs us, that even from one great brewer he contrived to realize an ample fortune. His methods must have been practised upon a considerable scale for some time; but we have no doubt that they have been all abandoned long ago. It was the French war, and the enormous tax upon malt, that was the real cause of the deterioration of the quality of London porter. Nor will it ever recover its former good qualities, till the tax on malt is reduced to its former rate; or unless the price of porter be greatly enhanced, which is not likely to happen. We have sometimes thought that if quassia were reduced to powder, and burnt like coffee, it might probably be employed with great advantage, both as a colouring matter of porter, and as likely to furnish the agreeable bitter, at present considered as peculiar to brown malt.

The quantity of malt employed annually in Great Britain, in brewing ale and beer, may be easily deduced from the annual statements of the amount of the malt tax, printed by order of the House of Commons.

In the year 1813 the gross produce of the malt tax for England was L.4,188,450. 6s. 9d. Now, as this duty is levied at the rate of four shillings and fourpence per bushel, it follows that the quantity of malt made in England, and charged with duty, amounted to 2,416,384.81 quarters. If we admit that the quantity of malt actually made exceeds by five per cent. what is charged with duty, in that case the whole malt actually made in England during the year 1813 was 2,537,204 quarters.

In Scotland the actual receipts during the year 1813 were L.134,106. 12s. 0½d. This, at the rate of three shillings and eightpence and half a farthing per bushel, which is the rate of the duty for Scotland, makes the number of the quarters of malt made in that kingdom during the year 1813 amount to 91,436.32. We cannot here make the allowance of five per cent. for the increase of bulk from malting, because we do not know what portion of this malt was made from English and what from Scotch barley. But as the duty in the Highlands of Scotland is lower than in the Lowlands, and as it cannot be doubted that a very considerable proportion of the barley malted in Scotland is the growth of England, perhaps we shall not err very far if we reckon the whole of the malt actually made in Scotland in 1813 at 100,000 quarters, which is only one twenty-sixth part of the whole malt made in Great Britain. Hence it follows that four times as much beer is consumed in England as in Scotland, in proportion to the population of the two countries. This is a prodigious advantage in favour of Scotland; for there cannot be a doubt that beer is inferior in salubrity to plain water as a beverage, and that, if the money spent by the common people in England on beer were employed to buy food, they would be much more healthy, stout, and happy, than they are at present.

In the year 1814 the gross receipts of the malt tax in England amounted to L.4,772,332. 5s. 5½d. This, at the rate of four shillings and fourpence per bushel, indicates 2,753,268.6 quarters of malt; and, making an allowance of five per cent. it follows that the whole malt made in England in 1814 amounted to 2,890,932 quarters.

In Scotland, during the same year, the gross receipts

ewing. on the malt duty amounted to L.125,787. 7s. 10 $\frac{1}{2}$ d. which, at the rate of three shillings and eightpence one eighth per bushel, indicates 85,521.18 quarters of malt. We may increase this on account of the increase of malt not reckoned in the tax, and on account of the tax in the Highlands being lower than in the Lowlands, to 90,000 quarters of malt, which is a tenth less than the quantity malted in 1813, while, in England, the quantity malted had increased considerably. Thus it appears that the whole quantity of malt made in Great Britain during the year 1814 was 2,980,932 quarters.

Malt made in 1813, in quarters.....2,637,204

Ditto in 1814.....2,980,932

Mean.....2,809,068

But this consumption of barley, enormous as it is, by no means gives us the whole of that grain consumed annually in Great Britain in the manufacture of spirituous liquors. For the distillers employ at least two thirds of the barley which they use in the state of raw grain. Now this quantity does not pay any malt tax, and, of course, is not included in the preceding estimate. It might be possible to form an idea of this quantity from the duty levied upon spirits, though such an inquiry would be foreign to the subject of this article.

But perhaps the following table, exhibiting the quantity of porter brewed by the thirteen principal houses in London, during nine years, will give the reader a more accurate conception of the extent to which the trade is carried in this country.¹

Quantity Brewed in One Year, ending	July 1807.	July 1808.	July 1809.	July 1810.	July 1811.	July 1812.	July 1813.	July 1814.	July 1815.
BY	Barrels.	Barrels.	Barrels.	Barrels.	Barrels.	Barrels.	Barrels.	Barrels.	Barrels.
Barclay & Perkins.....	166,600	184,196	205,328	235,053	264,405	270,259	257,265	262,467	337,621
Meux, Reid, & Co.....	170,879	190,169	150,105	211,009	220,094	188,078	165,153	165,628	182,104
Trueman, Hanbury, & Co.....	135,972	117,374	130,846	144,990	142,179	160,164	140,114	145,141	172,162
F. Calvert & Co.....	83,004	68,924	90,363	133,491	105,887	108,212	100,093	100,391	119,333
Whitbread & Co.....	104,251	111,185	100,275	110,939	122,316	122,446	135,892	141,104	161,018
H. Meux & Co.....	.....	.....	40,663	93,660	103,152	102,493	82,012	100,776	123,100
Combe.....	82,273	70,561	75,551	85,150	81,761	100,824	97,035	95,398	105,081
Brown, Parry, & Co. ² ...	125,654	131,647	114,001	84,475	72,367	51,274	45,500	30,162	38,107
Goodwynne, Skinner, & Co.....	72,580	70,232	60,233	74,233	85,181	81,022	71,467	62,019	72,080
J. Calvert ³	37,033	38,002	39,155	.....	.....	28,038	.....	30,252	32,256
Elliot & Co.....	47,388	48,669	45,608	57,251	58,042	58,035	49,269	45,162	56,922
Taylor.....	30,273	32,800	40,007	44,510	46,222	51,220	41,850	42,126	51,294
Clowes, Maddox, & Newbury.....	38,544	39,273	40,231	41,594	36,872	34,016	29,844	.....	.....
Totals.....	1,092,451	1,103,032	1,132,366	1,316,345	1,338,478	1,356,085	1,215,494	1,220,616	1,451,688

To form a proper estimate of the quantity of porter contained in this table, it is necessary to know that the London barrel contains thirty-six gallons.

The usual limits of the wort of strong ale in this country may be stated at from 60 to 120 pounds per barrel, or from the specific gravity 1.064 to 1.1275 at the temperature of 60°. The highest-priced ales also are not always the strongest, because the price depends in a great measure on the reputation of the brewer. The fermentation of ale is not carried far; and the consequence

is, that a considerable portion of the saccharine matter still remains in the liquid, apparently unaltered. By means of the infusion of nut-galls, too, traces of starch may be still detected in strong ale, even after it has been kept for some time in bottles. The annexed table exhibits the original strength of the wort before the fermentation began, and likewise the diminution of specific gravity produced by the fermentation, or the *attenuation*, as this diminution is termed by brewers and distillers.

¹ There are many other porter brewers in London besides those whose names are contained in this table. The following were the seven next in order to those given in the table for 1812, with the quantity of porter manufactured by each:

Martineau & Co.....	24,143 barrels.	Tickells.....	18,071 barrels.
Hodgson.....	24,143	Dickinson.....	16,292
Pryors.....	20,210	Green & Co.....	14,090
Starkey.....	18,136		

If we were to give an opinion respecting the different modes followed in the different houses, we would place Martineau at the head of the trade in point of accuracy and skill.

The following table exhibits the quantity of strong ale brewed by the seven principal houses in London, in the year ending the 5th of July 1815:

Stretton & Co.....	27,094 barrels.	Hale & Co.....	10,134 barrels.
Wyatt.....	22,146	Ball & Co.....	7,985
Charrington & Co.....	20,444	Thorpe & Co.....	5,433
Goding & Co.....	14,491		

² During the last four years in the table we have substituted Cox & Campbell.

³ During the last four years we have substituted Hollingsworth & Company.

Brewing.

Original Specific Gravity of the Wort.	Lbs. per Barrel of Saccharine Matter in it.	Specific Gravity of the Ale.	Lbs. per Barrel of Saccharine Matter in it.	Attenuation or proportion of Saccharine Matter decomposed.
1.095	88.75	1.050	46.25	0.478
1.0918	85.62	1.042	38.42	0.552
1.0829	78.125	1.0205	16.87	0.787
1.08625	80.625	1.0236	20.00	0.757
1.078	73.75	1.028	24.25	0.698
1.070	65.00	1.0285	25.00	0.615
1.10025	93.75	1.040	36.25	0.613
1.1025	95.93	1.042	38.42	0.6
1.0978	91.56	1.03075	27.00	0.705
1.0956	89.37	1.0358	32.19	0.640
1.113	105.82	1.0352	31.87	0.661
1.1092	102.187	1.0302	26.75	0.605
1.1171	110.0	1.040	36.25	0.669
1.103	96.4	1.0271	23.42	0.757
1.066	61.25	1.0214	17.8	0.709

As a certain quantity of alcohol is evolved in the ale by the fermentation, it is obvious that the last column is not quite accurate. The real quantity of saccharine matter in each of these also must be greater than what is indicated in that column, because the effect of the saccharine matter, in increasing the specific gravity of the ale, is counteracted by the alcohol, which tends to diminish that specific gravity. By casting the eye over the preceding table, it will be seen that the attenuation does not follow the ratio of the strength. It was greatest of all in the third, and least in the first brewing. These brewings being the same with those given in the fourth chapter, in order to illustrate the quantity of yeast used in fermenting, the reader, by comparing the two tables together, will be able to form some conclusions respecting the effect of

different quantities of yeast, and different temperatures upon the attenuation of strong ale, Brewing

Porter is much weaker than strong ale. The average specific gravity of porter wort, according to Shannon, as of strength deduced by the saccharometer, is 1.0645, which indicates 60 pounds per barrel of saccharine extract. Hence the reason why it is so much less glutinous and adhesive than strong ale. The fermentation which porter undergoes is, we believe, much less than that of ale; but we have no very accurate information on the subject. According to the experiments of Mr Brande, brown stout, which is the strongest porter made in London, contains 6.8 per cent. by measure, of alcohol of the specific gravity 0.825. If he had given us the specific gravity of this porter before distillation, it would have enabled us to determine in some measure the error in the attenuation, as indicated by the saccharometer.

The porter brewers in London use three kinds of malt; namely pale malt, amber malt, and brown malt. These three are mashed separately, and the worts from each are afterwards mixed together in the same fermenting vessel. In some breweries, as in that of Barclay and Perkins in the Borough, there are three separate mash-tuns. In other breweries, the custom is to mash one kind of malt the first day, another kind the second day, and a third kind the third day. The first day's wort is put into the fermenting vessel, and mixed with yeast; and the other two worts are added to it successively as they are formed. Hence it is very difficult to determine with accuracy the strength of the worts in the London breweries. It could only be done by knowing the quantity of wort from each malt, and its specific gravity when let into the fermenting vessel. We have had an opportunity of determining the strength of the porter wort in all the principal breweries in London. The average specific gravity of brown-stout wort is 1.0624. The wort of the best common porter is of the specific gravity 1.0535, that of the worts of the weakest is as low as 1.0374. The average specific gravity deduced from twenty brewings was 1.0500. Such wort contains about 46.4 lbs. per barrel of saccharine matter. Judging from the taste of some of the worts, quassia seems to be employed in considerable quantity by some of the brewers, and much more sparingly, if at all, by others. The fermentation of porter is carried on with considerable rapidity, so that it is over in two or three days. The specific gravity of the porter is usually brought down to 1.013 or 1.017. The specific gravity of the best brown-stout, after standing some months in the bottle, is 1.0106. The proportion of pale and brown malt used in the different houses varies. One of the best brewers in London uses nearly two parts pale malt to one part brown. (L.)

EXPLANATION OF THE PLATES.

Figs. 1 and 2, Plate CXXX., explain the arrangement of the utensils and machinery in a porter brewery on the largest scale; in which, however, it must be observed that the elevation, fig. 1, is in a great degree imaginary as to the plane upon which it is taken; but the different vessels are arranged so as to explain their uses most readily, and at the same time to preserve, as nearly as possible, the relative positions which are usually assigned to each in works of this nature.

The malt for the service of the brewery is stored in vast granaries or malt-lofts, usually situated in the upper part of the buildings. Of these, we have only been able to represent one at A, fig. 1; the others, which are supposed

to be on each side of it, cannot be seen in this view. Immediately beneath the granary A is the mill, in the upper floor of which are two pair of rollers for bruising or crushing the grains of the malt. (An enlarged representation of the rollers is given at figs. 3 and 4.) In the floor beneath the rollers are the mill-stones *b b*, where the malt is sometimes ground, instead of the simple bruising which it receives by passing between the rollers.

The malt, when prepared, is conveyed by a trough into a chest, *d*, from which it can be elevated by the action of a spiral screw *e* (see also figs. 5 and 6) into the large chest or binn B, for ground malt, situated immediately over the mashing-tun D. The malt is reserved in the binn

Brewing. till wanted, and it is then let down into the mashing-tun, where the extract is obtained by hot water supplied from the copper G.

The water for the service of the brewery is obtained from the well E, by a lifting pump worked by the steam-engine; and the forcing-pipe *f* of this pump conveys the water up to the large reservoir or water-back F, placed at the top of the engine-house. From this cistern iron pipes are laid to the copper G, and also every part of the establishment where cold water can be wanted for cleaning and washing the vessels. The copper G can be filled with cold water by only turning a cock; and the water, when boiled therein, is conveyed by the pipe *g* into the mashing-tun D. It is introduced beneath a false bottom, upon which the malt lies, and, rising up through the holes in the false bottom, it extracts the saccharine matter from the malt; a greater or less time being allowed for the infusion, according to circumstances. The instant the water is drawn off from the copper, fresh water must be let into it, in order to be boiled ready for the second mashing; because the copper must not be left empty for a moment, otherwise the intense heat of the fire would melt the bottom. For the convenience of thus letting down at once as much liquor as will fill the bottom of the copper, a pan or second boiler is placed over the top of the copper, as seen in fig. 3, Plate CXXXI.; and the steam rising from the copper communicates a considerable degree of heat to the contents of the pan, without any expense of fuel. This will be more minutely explained hereafter.

During the process of mashing, the malt is agitated in the mash-tun, to expose every part to the action of the water. This is done by a machine contained within the mash-tun, and put in motion by the horizontal shaft H, leading from the mill. The mashing-machine is shown in fig. 1, Plate CXXXI. When the mashing is finished, the wort or extract is drained down from the malt, into a vessel I, of similar dimensions to the mash-tun, and situated immediately beneath, from which it is called the under-back. Here the wort does not remain longer than is necessary to drain off the whole of it from the tun above. It is then pumped up by the three-barrelled pump *k*, into the pan at the top of the copper, by a pipe which cannot be seen in the plate.

The wort remains in the copper pan until the water for the succeeding mashes is discharged from the copper. But this waiting is no loss of time, because the heat of the copper, and the steam arising from it, makes the wort, which had become cooler, ready for boiling. The instant the copper is empty, the wort is let down from the pan into the copper, and the second wort is pumped up from the under-back into the copper pan. The proper proportion of hops is thrown into the copper through the near hole, and then the door is shut down, and screwed fast, to keep in the steam, and cause it to rise up through pipes into the pan; and by bubbling up through the wort in the pan, it communicates so much heat that it is soon ready for boiling in its turn; for it is to be observed, that the different worts follow each other through all the different vessels with the greatest regularity, so that there is no loss of time, but every part of the apparatus is constantly employed. When the boiling of the wort has continued a sufficient time to coagulate the grosser part of the extract and to evaporate part of the water, the contents of the copper are run off through a large cock into the jack-back K, which is a vessel of sufficient dimensions to contain it, and provided with a bottom of cast-iron plates, perforated with small holes, through which the wort drains and leaves the hops. The hot wort is drawn off from the jack-back through the pipe *h* by the three-barrelled pump, which throws it up to the coolers L, this pump being made

Brewing. with different pipes and cocks of communication, to serve all the purposes of the brewery except that of raising the cold water from the well. The coolers L are very shallow vessels, built over one another in several stages; and that part of the building in which they are contained is built with open lattice-work on all sides, to admit the free current of air. When the wort is sufficiently cooled to be put to the first fermentation, it is conducted in pipes from all the different coolers to the large fermenting vessel or gyle-tun M, which, with another similar vessel behind it, is of sufficient capacity to contain all the beer of one day's brewings.

When the first fermentation is concluded, the beer is drawn off from the great fermenting vessel M into the small fermenting casks or cleansing vessels N, of which there are a great number in the brewery. They are placed four together, and to each four a common spout is provided to carry off the yeast, and conduct it into the troughs *u* placed beneath. In these cleansing vessels the beer remains till the fermentation is completed, and it is then put into the store-vats, which are casks or tuns of an immense size, where it is kept till wanted, and is then drawn off into barrels and sent away from the brewery. The store-vats are not represented in the plate, but are of a conical figure, and of different dimensions, from fifteen to forty feet diameter, and usually twenty feet in depth. The steam-engine which puts all the machinery in motion is explained by the figure. On the axis of the large fly-wheel is a bevelled cog-wheel, which turns another similar wheel upon the end of a horizontal shaft, which extends from the engine-house to the great horse-wheel, which it turns by means of a cog-wheel. The horse-wheel puts in motion all the pinions for the mill-stones *bb*, and also the horizontal axis which works the three-barrelled pump *k*. The rollers *aa* are turned by a bevelled wheel upon the upper end of the axis of the horse-wheel, which is continued for that purpose; and the horizontal shaft H, for the mashing engine, is driven by a pair of bevelled wheels. There is likewise a sack-tackle, which is not represented. It is a machine for drawing up the sacks of malt from the court-yard to the highest part of the building, whence the sacks are wheeled on a truck to the malt-loft A, and the contents of the sacks are thrown in.

The horse-wheel is intended to put in horses occasionally if the steam-engine should fail; but these engines are now brought to such perfection that it is very seldom any accidents occur with them.

Fig. 2, Plate CXXX., is a representation of the fermenting-house at the brewery of Messrs Whitbread and Company, Chiswell Street, London, which is by far the most complete in its arrangement of any work of the kind, and was erected after the plan of Mr Richardson, who conducts the brewing at those works. The whole of fig. 2 is to be considered as devoted to the same object as the large vessel M and the casks N, fig. 1. In fig. 2, *r* is the pipe which leads from the different coolers to convey the wort to the great fermenting vessels or squares M, of which there are two, one behind the other; *ff* represents a part of the great pipe which conveys all the water from the well E, fig. 1, up to the water cistern F. This pipe is conducted purposely up the wall of the fermenting-house, fig. 2, and has a cock in it, near *r*, to stop the passage. Just beneath this passage a branch-pipe *p* proceeds and enters a large pipe *xx*, which has the former pipe *r* within-side of it. From the end of the pipe *x*, nearest to the squares M, another branch *nn* proceeds, and returns to the original pipe *f*, with a cock to regulate it. The object of this arrangement is to make all, or any part of, the cold water flow through the pipe *xx*, so as to surround the wort-pipe *r*, which is only made of thin copper, and lower the temperature of the wort passing through the pipe *r*,

Brewing. until, by the thermometer, it is found to have the exact temperature which is desirable before it is put to ferment in the great square M. By means of the cocks at *n* and *p*, the quantity of cold water which shall pass in contact with the surface of the pipe *r* can be regulated at pleasure, so as to have a command of the heat of the wort when it enters into the square.

When the first fermentation in the squares M is finished, the beer is drawn off from them by pipes marked *v*, and conducted by its branches *w* to the different rows of fermenting-tuns marked NN, which fill all the building. Between every two rows are placed large troughs to contain the yeast which they throw off. The plate shows that the small tuns are all placed on a lower level than the bottom of the great vessels M, so that the beer will flow into them, and, by standing in them all, will fill them to the same level. When they are filled, the communication-cock is shut; but as the working off of the yeast diminishes the quantity of beer in each vessel, it is necessary to fill them up again. For this purpose the two large vats OO are filled from the great vessels M before any beer is drawn off into the small casks N, and this quantity of beer is reserved at the higher level for filling up. The two vessels OO are in reality placed between the two squares M, but we have been obliged to place them so that they can be seen. Near each filling-up tun *o* is a cistern *t*, with a pipe of communication from the tun O, and this pipe is closed by a float-valve. The small cisterns *t* have always a communication with the pipes which lead to the small fermenting vessels N, and therefore the surface of the beer in all the tuns and in the cisterns will always be at the same level; and as this level subsides by the working off of the yeast from the tuns, the float sinks and opens the valve, so as to admit a sufficiency of beer from the filling-up tuns *o* to restore the surfaces of the beer in all the tuns, and also in the cistern *t*, to the original level. In order to carry off the yeast which is produced by the fermentation of the beer in the tuns OO, an iron dish or vessel is made to float upon the surface of the beer which they contain; and from the centre of this dish a pipe *o* descends and passes through the bottom of the tun, being filled through a collar of leather so as to be tight, at the same time that it is at liberty to slide down as the surface of the beer descends in the tun. The yeast flows over the edge of this dish, and is conveyed down the pipe to a trough beneath.

Beneath the fermenting house are large arched vaults P, built with stone, and lined with stucco. Into these the beer is let down when sufficiently fermented, and is kept till wanted. These vaults are used at Mr Whitbread's brewery instead of the great store-vats of which we have before spoken, and are in some respects preferable, because they preserve a great equality of temperature, being beneath the surface of the earth.

Figs. 3 and 4, Plate CXXX., represent the malt-rollers, or machine for bruising the grains of malt. A is the hopper into which the malt is let down from the malt-loft above, and from this the malt is let out gradually through a sluice or sliding-shuttle *a*, and falls between the rollers BD. These rollers are made of iron, truly cylindrical, and their pivots are received in pieces of brass let into iron frames, which are bolted down to the wooden frame of the machine. A screw E is lapped through the end of each of these iron frames; and by these screws the brasses can be forced forwards, and the rollers made to work closer to each other, so as to bruise the malt in a greater degree. G is the shaft by which one of the rollers is turned, and the other receives its motion by means of a pair of equal cog-wheels H, which are fixed upon the ends of the pivots, at the opposite ends of each of the rollers: *d* is a small

lever, which bears upon the teeth of one of these cog-wheels, and is thereby lifted up every time a cog passes. This lever is fixed on the extremity of an axis, which passes across the wood frame, and in the middle of it has a lever *c*, fig. 3, bearing up a trough *b*, which hangs under the opening of the hopper A. By this means the trough *b* is constantly jogged, and shakes down the malt regularly from the hopper A, and lets it fall between the rollers: *e* is a scraper of iron plate, which is always made to bear against the surface of the roller by a weight, to remove the grains which adhere to the roller.

Fig. 5 is the screw by which the ground or bruised malt is raised up, or conveyed from one part of the brewery to another. K is an inclined bar or trough, in the centre of which the axis of the screw H is placed; and the spiral iron plate or worm, which is fixed projecting from the axis, and which forms the screw, is made very nearly to fill the inside of the box. By this means, when the screw is turned round by the wheels EF, or by any other means, it raises up the malt from the box *d*, and delivers it at the spout G.

The screw is equally applicable for conveying the malt horizontally in the trough *k* as inclined; and similar machines are employed in various parts of breweries for conveying the malt wherever the situation of the works require.

Fig. 1, Plate CXXXI., is the mashing-machine. WW is the tun, made of wood staves, hooped together. In the centre of it rises a perpendicular shaft NN, which is turned slowly round by means of the bevelled wheels KI at the top. RR are two arms projecting from the axis, and supporting the short vertical axis S at the extremities, so that, when the central axis is turned round, it will carry the axle S round the tun in a circle. The axis S is furnished with a number of arms T, which are shown in fig. 2, and have blades placed obliquely to the plane of their motion. When the axis is turned round, these arms agitate the malt in the tun, and give it a constant tendency to rise upwards from the bottom.

The motion of the axis S is produced by a wheel Q on the upper end of it, which is turned by a wheel P fastened on the lower end of the tube O, which turns freely round upon the central axis N. On the upper end of the same tube O is a bevelled wheel M, receiving motion from a wheel L, which is fixed upon the end of the horizontal axis F, which gives motion to the whole machine. This same axis has a pinion G upon it, which gives motion to the wheel H, fixed upon the end of a horizontal axle, which at the opposite end has a bevelled pinion I working the wheel K, before mentioned. By this means the rotation of the central axis N will be very slow compared with the motion of the axis S, for the latter will make seventeen or eighteen revolutions on its own axis in the same space of time that it will be carried once round the tun by the motion of the axis N. At the beginning of the operation of mashing, the machine is made to move with a slow motion; but, after having wetted all the malt by one revolution, it is made to revolve quicker. For this purpose the ascending shaft A, which gives motion to the machine, has two bevelled wheels BC fixed upon a tube X, which is fitted upon the shaft. These wheels actuate the wheels D and E upon the end of the horizontal shaft F; but the distance between the two wheels B and C is such, that they cannot be engaged both at once with the wheels D and E; but the tube X, to which they are fixed, is capable of sliding up and down on the axis A sufficiently to bring either wheel B or C into action with its corresponding wheel E or D upon the horizontal shaft; and as the diameters of BE and CD are of very different proportions, the velocity of the motion of the machine can

Brewing. be varied at pleasure by using one or other: *b* and *c* are two levers, which are forked at the ends, and embrace collars at the ends of the tube X; and the levers being united by a rod, the handle *b* gives the means of moving the tube X and its wheels BC up or down to obtain the action of the different wheels.

Figs. 3 and 4 represent a large close copper. AA is the copper, and B the pan placed over it. The copper has a large tube E rising up from the dome of it, to convey the steam; and from the top of this four inclined pipes R descend, the ends being immersed beneath the surface of the water or wort contained in the pan. By this means the steam which rises from the copper issues from the ends of the pipes R, and rises in bubbles through the liquor in the pan, so as to heat it. In the centre of the copper is a perpendicular spindle *a*, which, at the lower end, has arms *dd* fixed projecting from it, and is turned round by a cog-wheel *b* at the upper end. From the arms *dd* chains are hung in loops, which drag round upon the bottom of the copper when the axis is turned; and this motion stirs up the hops to keep them from burning at the bottom: *fg* is a chain and roller to draw up the spindle *a* when the rowser is not wanted; and *ee* are iron braces proceeding from the outside of the copper, to retain the axis *a* firmly in the centre of the copper. D is the waste-pipe for carrying off the steam into the chimney when it is not required to heat the liquor in the pan. The copper represented in the drawing is made in the same manner as usual; but the fire is applied beneath it in a manner very different from the common brewing-coppers. The method was devised with a view to the burning or consuming of the smoke, and was employed in the brewery of Messrs Meux and Company, London, about the year 1803.

The fire-place is divided into two by a wall extended beneath the bottom of the boiler, as shown by Z in the plan, fig. 4, where the dotted circle A represents the bottom of the copper, and the circle X its largest part. The section in fig. 3 shows only one of these fire-places, of which C is the fire-grate. The raw coal is not thrown in through the fire-door in the manner of common furnaces, but is put into a narrow inclined box of cast-iron *h*, built in the brick-work, and shaped like a hopper. The coals contained in this hopper fill it up, and stop the entrance of the air so as to answer the purpose of a door; and the coals at the lowest part or mouth of the hopper are brought into a state of ignition before they are forced forwards into the furnace, which is done by introducing a rake or poker at *i*, just beneath the lower end of the hopper *h*, and forcing the coals forwards upon the grate bars C. Immediately over the hopper *h*, a narrow passage is left to admit a stream of fresh air along the top of the hopper to pass over the surface of the fuel which is burning at the lower end of the hopper *h*. By this means the smoke rising from that portion of fuel is carried forwards over the burning coals upon the grate C, and is thereby consumed. Beyond the grate bars *c*, a breast wall S is erected, to direct the flame upwards against the bottom of the boiler A, and thence descending under the bottom, the flame is received into the flues, which make each a half turn round the lower part of the copper, as shown in the plan at *tt*, and then enter the chimney or perpendicular flue W at the same point; the entrance being regulated by a damper to make the draught more or less intense. There is also a sliding door or damper E, which closes up the lower part of the chimney; and by means of these two dampers the fire under the copper can be regulated to the greatest precision; for by opening the damper F it admits the cold air to enter immediately into the chimney W, and thus take off the rapidity of the draught; VOL. V.

Brewing. and at the same time, by closing the dampers from the flues into the chimney, the intensity of the draught through the fire is checked, which is very necessary to be done when the contents of the copper are drawn off. Immediately over the fire-grate *c*, an arch of fire-bricks or stone *s* is placed beneath the bottom of the copper, to defend it from the intense heat. The chimney is supported on iron columns RR. Behind the fire-grate *c* is a cavity *r*, for the reception of the masses of scoræ which are always formed in so large a fire. They are pushed back off the grate into this receptacle with an iron hook as fast as they accumulate. The bottom of this receptacle is formed of sliding iron doors, which can be opened by drawing them out, and in this way the clinkers are discharged; or the whole of the fire may be driven back off the grate into this cavity, and will then fall through into the ash-pit and be removed into the copper, which is very necessary to be done when the copper is to be cooled, so that men may descend into it to clean out the sediment which is left after boiling the wort. For a more particular description of this method of setting boilers, see *Philosophical Magazine*, vol. xvii.

Fig. 6 represents one of the sluice-cocks which are used to make the communications of the pipes with the pumps or other parts of the brewery. BB represents the pipe in which the cock is placed. The two parts of this pipe are screwed to the sides of a box CC, in which a slider A rises and falls, and intercepts at pleasure the passage of the pipe. The slider is moved by the rod *a*, which passes through a stuffing-box in the top, the box which contains the slider, and has the rack *b* fastened to it. The rack is moved by a pinion fixed upon the axis of a handle *e*, and the rack and pinion is contained in a frame *d*, which is supported by two pillars. The frame contains a small roller behind the rack, which bears it up towards the pinion, and keeps its teeth up to the teeth of the pinion. The slider A is made to fit accurately against the internal surface of the box C, and it is made to bear against this surface by the pressure of a spring, so as to make a perfectly close fitting.

Fig. 5 is a small cock to be placed in the side of the great store-vats, for the purpose of drawing off a small quantity of beer, to taste and try its quality. A is a part of the stave or thickness of the great store-vat; into this the tube B of the cock is fitted, and is held tight in its place by a nut *aa* screwed on withinside. At the other end of the tube B a plug *c* is fitted, by grinding it into a cone, and it is kept in by a screw. This plug has a hole up the centre of it, and from this a hole proceeds sideways and corresponds with a hole made through the side of the tube when the cock is open; but when the plug *c* is turned round, the hole will not coincide, and then the cock will be shut. D is the handle or key of the cock, by which its plug is turned to open or shut it; this handle is put up the bore of the tube (the cover E being first unscrewed and removed), and the end of it is adapted to fit the end of the plug of the cock. The handle has a tube or passage bored up it to convey the beer away from the cock when it is opened, and from this the passage *f*, through the handle, leads to draw the beer into a glass or tumbler. The hole in the side of the plug is so arranged, that when the handle is turned into a perpendicular direction with the passage *f* downwards, the cock will be open. The intention of this contrivance is, that there shall be no considerable projection beyond the surface of the tun; because it sometimes happens that a great hoop of the tun breaks, and, falling down, its great weight would strike out any cock which had a projection; and if this happened in the night much beer might be lost before it was discovered. The cock above described being

Briançon almost wholly withinside, and having scarcely any projection beyond the outside surface of the tun, is secure from this accident.

Fig. 7 is a small contrivance of a vent peg, to be screwed into the head of a common cask when the beer is to be drawn off from it, and it is necessary to admit some air to allow the beer to flow. AA represents a portion of the head of the cask into which the tube B is screwed. The

top of this tube is surrounded by a small cup, from which project the two small handles CC, by which the peg is turned round to screw it into the cask. The cup round the upper part of the tube is filled with water, and into this a small cup D is inverted; in consequence, the air can gain admission into the cask when the pressure within is so far diminished that the air will bubble up through the water, and enter beneath the small cup D.

BRIANÇON, an arrondissement of the department of the Upper Alps, in France, 658 square miles in extent, and containing five cantons, twenty-seven communes, and 82,370 inhabitants. The chief place, a city of the same name, stands in an alpine situation on the river Durance, and is strongly fortified, having been considered as the key of the gate between France and Italy. It contains only 2976 civil inhabitants. Long. 6. 39. E. Lat. 44. 64. N.

BRIANSK, a circle in the Russian government of Orel, with a population of 68,540 persons. The chief place is the city of the same name, on the river Desna. It trades in iron, corn, hemp, flax, and oak-bark, and contains about 6000 inhabitants. Long. 34. 14. E. Lat. 53. 21. N.

BRIAREUS, in fabulous history, a giant, the son of Æther, Titan, or Cœlus, and Terra. This was his name in heaven; but on the earth he was called Ægeon. He was of singular service to Jupiter, when Juno, Pallas, Neptune, and the rest of the gods, endeavoured to bind him in chains and dethrone him; but he afterwards conspired with the rest of his gigantic brethren to dethrone the father of the gods. In adverting to this legend, Virgil describes him as having a hundred hands and fifty heads, and breathing out fire. The fable says that Jupiter, to punish him, thrust him under Ætna, and that, as often as he moves, the mountain belches out fire.

BRIBE, a reward given to pervert the judgment. The word is French, *bribe*, which originally denotes a bit, fragment, or relic of meat taken off the table; so that bribe imports as much as *panis mendicatus*, and still keeps up the idea of the matter of which bribes anciently consisted. Hence also the Spaniards use *bribar* and *brivar* for *begging*; and *brivia*, *brivoneria*, and *brivonismo*, for *beggary*. In the writers of the middle ages, a bribe given to a judge is called *quato litis*, and the receiver *campi particeps*, or *cambi particeps*; because the spoils of the field, or the profits of the cause, were thus shared with the giver.

BRIBERY, in *Law*, is a high offence, where a person in a judicial station takes any fee, gift, reward, or brockage for doing his office, except of the king. But, taken largely, it signifies the receiving or offering any undue reward to or by any person concerned in the administration of public justice, whether judge, officer, or other, to act contrary to his duty; and sometimes it signifies the taking or giving of a reward for public office.

In the East it is the custom never to petition any superior for justice, not excepting their kings, without a present. This is calculated for the genius of despotic countries, where the true principles of government are not understood, and it is imagined that there is no obligation due from the superior to the inferior, no relative duty owing from the governor to the governed. The Roman law, though it contained many severe injunctions against bribery, as well for selling a man's vote in the senate or other public assembly, as for the bartering of common justice, yet, by a strange indulgence in one instance, it tacitly encouraged this practice, by allowing the magistrate to receive small presents, provided they did not on the whole exceed a hundred crowns a year; not considering

the insinuating nature and gigantic progress of this vice, when once admitted. Plato, therefore, in his ideal republic, orders those who take presents for doing their duty to be punished in the severest manner; and by the laws of Athens, he who offered a bribe was prosecuted, as well as he who received it. In England this offence of taking bribes is punished, in inferior officers, with fine and imprisonment; and in those who offer a bribe, though it be not taken, the same. But in judges, especially the superior ones, it has always been looked upon as so heinous an offence, that Chief Justice Thorpe was hanged for it in the reign of Edward III. By a statute 11 Henry IV. it was enacted that all judges and officers of the king convicted of bribery should forfeit triple the bribe, be punished at the king's will, and be discharged from his service for ever.

BRICIANI, those of the order of that name. This was a military order, instituted by St Bridget, queen of Sweden, who gave them the rules and constitutions of the orders of Malta and St Augustin. This order was approved of by Pope Urban V.

BRICK, a kind of artificial stone made of baked clay.

1. The art of making bricks is so simple that it must have been practised in the earliest ages of the world; probably before mankind had discovered the method of fashioning stones to suit the purposes of building. The book of Genesis informs us, that burnt bricks were employed in the construction of Babel. Now, as this structure appears to have been raised about four hundred years after the period of the Flood, we may say, without much exaggeration, that the method of making bricks existed from the very origin of society. Bricks seem to have been in common use in Egypt while the Israelites were in subjection to that nation; for the task assigned them was the making of brick; and we are informed in Exodus that the Israelites built two Egyptian cities. No particulars are given in Scripture of the method of making bricks; but as straw was one of the ingredients, and as it very seldom rains in Egypt, it is probable that their bricks were not burnt, but merely baked by the heat of the sun. The same mode of making bricks seems still to be practised in the East; for the ruins of the tower near Bagdad are formed of unburnt bricks. We have seen specimens from that place; they are large, but thin, and have a brown colour. It is not at all likely that structures of unburnt brick should have been able to resist the weather since the time of Nebuchadnezzar; and hence it is probable that the tower in question was raised by the Arabs in comparatively modern times.

The art of brick-making was carried to considerable perfection by the Greeks. Pliny informs us that they made use of bricks of three different sizes, distinguished by the following names; *didoron*, or six inches long; *tetradoron*, or twelve inches long; and *pentadoron*, or fifteen inches long (lib. xxxv. c. 14). That the Romans excelled in the art of making bricks we have the amplest evidence, since brick structures raised at Rome 1700 years ago still remain as entire as when first built. Brick-making has been carried to great perfection by the Dutch, who have long been in the

ick. habit of forming their floors, and even in some cases of paving their streets with bricks. And it is remarkable how long their bricks will continue uninjured in such situations. Though brick-making has long been carried on in England, and especially in the neighbourhood of London, upon a very great scale, and though the process upon the whole is conducted in this country with very considerable skill, yet it must be acknowledged that English bricks are by no means so durable as Dutch bricks. We are disposed to ascribe this inferiority not so much to the nature of the materials employed in the manufacture of English bricks, as to the mode most frequently employed in London in building houses. Few of the London houses, comparatively speaking, are freeholds. Most of them are built upon ground let for a lease of a certain number of years, which seldom exceeds ninety-nine years. After the expiration of this period, the house becomes the property of the landlord who let the ground. Thus it becomes the interest of the builder to construct the house so that it shall last only as long as the lease. Hence the goodness of the bricks becomes only a secondary object. Their cheapness is the principal point. The object, therefore, of the brickmakers is not to furnish durable bricks, but to make them at as cheap a rate as possible. Accordingly, the saving of manual labour, and of fuel, has been carried by the makers of London bricks to very great lengths. We cannot but consider this mode of proceeding as very objectionable, and as entailing a much heavier expense upon London than would have been incurred had twice the original price been laid out upon the bricks when they were first used, and had the houses been constructed to last a thousand instead of a hundred years. No doubt, certain advantages attend these ephemeral structures. The inhabitants are enabled, once every century, to suit their houses to the prevailing taste of the day; and thus, there are no antiquated houses in London. But as the increase of the price of all the materials of building has more than kept pace with the increase of the wealth of individuals, it is to be questioned whether the houses are always improved when they are pulled down and rebuilt.

Nat and
kind of
clay 2. The best material for making brick is what in the English language is called *loam*, a term usually applied to a natural mixture of sand and clay. Such a mixture may be converted into brick without any addition whatever. Marl likewise answers the purpose of common bricks very well, indeed better than most other mixtures. Marl is a natural mixture of limestone and clay in variable proportions. Now, the more lime it contains, the better does it answer for a manure; and the less lime it contains, the more suitable it is to the brick-maker.

It would be in vain to attempt a particular detail of the constituents of clay, because they vary too much from each other to admit of any correct generalization. We believe, however, that clays very frequently consist of decomposed felspar, in which case we may conceive them as composed of about three parts of silica in the state of a very fine powder, and one part of alumina. This is the case with porcelain clay. Indeed, the porcelain clay of Cornwall appears incontrovertibly to be nothing else than decayed felspar, or perhaps felspar which never had assumed any other form than that of clay. The rock from which it is taken is an agglutinated mixture of quartz and this clay. The quartz is separated by washing. Such a rock might probably be converted into most beautiful brick, merely by cutting it out in the proper shape, and subjecting it to the requisite heat; or rather, by kneading the whole into a paste with the requisite quantity of water, moulding it into bricks, and then drying and burning them.

Potter's clay is a compound of

Silica.....	43.5
Alumina.....	33.2
Lime.....	3.5
Oxide of iron.....	1.0
Water.....	18.0

	99.2
Loss.....	8

Total.....	100.0
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When the clay proceeds from the decomposition of hornblende, as is likewise often the case, it contains about three parts and a half of silica, one of alumina, one of lime, and about one and a half of oxide of iron. Sometimes the grains of sand which exist in clay consist of fragments of felspar. In such cases the clay may be fused by heat.

No mixture of alumina and silica, in any proportions whatever, can be fused by the strongest heat which can be raised in our furnaces. Hence such mixtures are best adapted for making fire-bricks, crucibles, and glass-house pots. Stourbridge clay is such a mixture, blackened by coaly matter. It answers these purposes better than any other clay in England. It is a slate clay belonging to the coal formation, and contains interspersed coaly matter. There is a similar bed of clay upon the banks of the Calder, about ten miles east from Glasgow. Mr Buttray uses it to make the crucibles in which he fuses steel, a process requiring the most intense heat that can be raised in furnaces. Its quality seems fully equal to that of Stourbridge clay. Neither can a mixture of lime and alumina be fused, in whatever proportions the ingredients be mixed. But a mixture of silica, lime, and alumina, is very fusible, and the fusion is most readily effected when we employ two parts of silica to one of lime. The presence of oxide of iron also renders clay fusible, but not unless its proportion be much greater than ever is likely to occur in any clay used for the manufacture of bricks.

For making common bricks, the most durable mixture ought to be common clay and limestone or chalk. Perhaps the best proportions would be three parts of clay, and one part of limestone or chalk in powder. When such a mixture is exposed to heat, it would experience an incipient fusion, and would thereby be rendered much harder and denser than common bricks. The consequence would be, that it would imbibe much less water, and would therefore be much less liable to crack and fall to pieces in winter, than common bricks. For when water has insinuated itself into the pores of a common brick, and is converted into ice, it undergoes an expansion which dislocates the parts of the brick and reduces it to fragments. This is often conspicuously the case with tiles, which, from their exposed situation, are more liable to be soaked with water than common bricks. Hence also covering the surface of the brick with a coating of paint has a great tendency to preserve them from cracking and breaking. This practice is frequently followed in England.

It would be foreign to the object of this article to enter into any long details respecting the chemical investigations and the opinions entertained at different periods respecting the nature of clay. At first it was supposed to be a peculiar species of earth, but Hellot demonstrated that it consisted at least of two constituents; for sulphuric acid had the property of destroying its plastic nature, and of rendering it scarcely more adhesive than sand. The portion that remained behind did not effervesce with acids. It was not therefore of a calcareous nature. Mr Pott went a step farther; he showed, in the continuation of his *Lithogegnosia*, that sulphuric acid formed, with the por-

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tion of clay which it dissolved, a salt possessing the properties of alum. In the year 1769 Baumé published his *Dissertation on Clays*, which he had drawn up in consequence of a premium offered by the Academy of Sciences at Bordeaux, for the best solution of the following question:—What are the principles and constituents of clay, and the natural changes which it experiences, and what are the methods of rendering it fertile? The academy did not consider Baumé's solutions as satisfactory. He published his Memoir, in consequence, as a kind of defiance. He had been employed along with Macquer in making numerous experiments on clay, with a view to the improvement of the porcelain manufacture in France. Guided by these experiments, he drew as a conclusion that clay is a mixture of two different substances: 1. Silica in a state of purity; 2. Silica combined with an underdose of sulphuric acid. It was the second of these constituents that gave to clay its fattish and plastic nature. Margraaf had long before (in 1756) demonstrated that the ingredient of clay which Baumé took for a salt, and which he affirmed was soluble in water, was a peculiar species of earth, different from every other, which constitutes the basis of alum, which dissolves in sulphuric acid, but which does not form alum unless a portion of potash be added to the solution. Thus, by the labours of Hellot, Pott, Baumé, and Margraaf, the nature of clay was completely developed. It was ascertained to be a mixture of alumina and silica, in variable proportions. It was shown, also, that it sometimes contained sulphuric acid, and not unfrequently potash. Hence the reason why, in some cases, it could be converted into alum by digestion in sulphuric acid, without the necessity of adding any potash to the solution. Modern chemists have added considerably to these facts. They have shown that chalk, felspar, mica, hornblende, oxide of iron, coal, bitumen, &c. are not unfrequently mixed with it; and that these additions alter its qualities considerably, and render it fit or unfit for the different purposes to which clay is usually applied.

Preparation of the clay, and formation of the brick.

3. Clay intended to be made into bricks ought to be dug out of the earth and exposed to the air and weather for a considerable time before it is employed. The longer this exposure is continued, so much the better will it be fitted for making bricks. This exposure answers a variety of purposes. If the stones, by the decomposition of which the clay has been formed, are not entirely decomposed, this exposure serves to complete the process, by promoting the disintegrating action of the air and rain. The exposure serves likewise to pulverize the clay, which is essential to the making of good bricks. We have little doubt that the same amelioration in the clay would be produced by simply drying it in the open air, and then grinding it to powder in a mill. By such a process the quality of the bricks would be prodigiously improved. Nor do we conceive that such an addition would greatly enhance the expenses of the brickmaker, at least in those districts where the mill could be driven by water.

When the clay has been reduced to powder, the next step is to make it into a stiff paste with water. Too much water should not be employed, because it is injurious to the strength of the bricks; and the utmost care should be taken to mix the whole of the clay as equally as possible with the water. If some parts of the paste be moister than others, it will occasion an inequality in the texture of the bricks formed of it, will render them apt to crack, and will greatly injure both their strength and their beauty. Hence the great importance of working the clay for a considerable length of time before moulding it into bricks. It is in this part of the process that we believe British brickmakers in general are most defective. As far as we have had an opportunity of witnessing the pro-

cess of kneading the clay, as conducted either in the neighbourhood of London or Edinburgh, we have always found a great sparing of labour. Hence we believe the reason why so many of the English bricks appear full of cracks, even when sold to the builder. Such bricks ought never to be purchased, as it is perfectly obvious that they cannot make a durable building.

The kneading of the clay is performed in some places by men's feet, in others by the feet of horses, and in others by machinery. The last method is undoubtedly the best; and we conceive likewise that it might be rendered the cheapest. It would be easy to devise machinery for kneading the clay, upon principles similar to those employed in mashing by the London porter brewers. And, if such a machine were driven by water, we conceive that it would not be nearly so expensive as either men or horses.

When the clay is sufficiently kneaded, it is moulded into the form of a brick, by being put into a very simple wooden mould; and the upper part of the brick is made smooth and even by cutting off the superfluous part with a wooden knife. The process is very simple, and is conducted by the workmen with great rapidity. A good brickmaker would mould about 5000 bricks in a day. He disengages the bricks from the mould by a gentle stroke on the back of the mould; and the wet bricks are at first arranged in rows upon long boards. When sufficiently dry to be handled, they are turned, and at last piled up in loose walls, which are thatched with straw to keep off the rain. In this position they are allowed to remain till they have become as dry as they can become in the open air.

In many cases the clay used for brick-making is destitute of the requisite quantity of sand. If such clay were made into bricks, it would shrink so much in their burning, that the bricks would lose their shape, and would probably crack in every direction. To prevent this, it is necessary to add a certain quantity of sand. This sand should not be very fine. It answers best when the particles are of such a size as to be readily distinguished by the naked eye. Even when as large as coriander seeds, it has been found to answer better than very fine sand. The brickmakers in the neighbourhood of London bring their sand from the bottom of the Thames near Woolwich, where it is raised by boats employed for that purpose, and brought up the river for the use of the brick-makers.

4. No general directions can be given respecting the quantity of sand to be mixed with the clay, because that depends upon the nature of the clay and upon the uses for which the bricks are intended. The more sand is added, the more accurately do the bricks retain their shape, and the less apt are they to crack during the burning, but at the same time their strength is diminished. Chemical lutes are often composed of four parts of sand and one part of clay. Such mixtures do not contract much in burning, and, therefore, are not apt to crack and drop off, which is the reason why chemists employ them. But they have not the adhesiveness of brick after being burned, and would not therefore answer the purposes of the brick-maker. In stone-ware the mixture consists of about four parts of clay and one of fine sand. It burns to a hard cohesive substance, capable of striking fire with steel. Such a proportion, then, in many cases would answer the purposes of the brick-maker.

The London brick makers make another addition to the clay, which we believe is peculiar to them. They add to every three parts of the clay about one part of the ashes from the fire-places of the city of London. These ashes contain some earthy matter; but they consist in a great measure of small coal unburnt and little altered, which has fallen through the interstices of the grate. The conse-

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quence is, that such a mixture, when sufficiently heated, takes fire and burns of itself, though very slowly; so that the London bricks are burned in a great measure by means of the fuel mixed with the clay of which they are composed.

It is essential to dry the bricks thoroughly in the open air before burning them; for when heat is applied to wet clay, the water which it contains being prevented from escaping by the adhesiveness of the mixture, is converted into steam, and cracks and breaks the mass of clay to pieces. Indeed, after the bricks are rendered as dry as they can become in the open air, they ought to be exposed at first to a gentle heat, which ought to be raised to redness very slowly, and in proportion as the moisture of the brick is dissipated. Water adheres with such obstinacy to clay, that it is never all driven off by the heat at which bricks are burnt. But the portion which remains is so intimately combined with the clay, as to constitute one solid mass, which has no great tendency to absorb an additional quantity of water.

Bricks are most commonly burnt in a kiln. This is a very simple structure, usually about thirteen feet long, ten and a half wide, and twelve feet high. The walls are one foot two inches thick, and incline a little to each other as they ascend. The bricks are placed on flat arches, having holes left in them like lattice-work. After the bricks are arranged on the kiln, to the number of about 20,000, they are covered with old bricks or tiles. Some brush-wood is then kindled in the kiln, and a moderate fire kept up till the bricks are rendered as dry as possible. The time required for this is two or three days; and the bricks are known to be dry when the smoke (which is at first black) becomes transparent. The mouth of the kiln is then filled up with pieces of brick and clay, leaving only room to introduce a faggot at a time. This structure at the mouth of the kiln is called a *shinlog*. The kiln is then supplied with faggots of furze, heath, fern, or whatever vegetable substance can be procured at the cheapest rate, till the arches look white, and the fire appears at the top. The fire is then diminished, and at length allowed to go out, and the kiln is permitted to cool. This burning process usually lasts about forty-eight hours.

The method of burning bricks in the neighbourhood of London is very different from this; and we do not know whether it be practised anywhere else. It obviously originated from the difficulty of procuring a sufficient quantity of vegetable matter to burn the enormous number of bricks consumed every year in London. If we consider the immense extension of houses which has taken place in London within the last fifty years, and if we consider that this vast city, containing nearly 1,500,000 inhabitants, is almost renewed every century, we may be able to form some notion of the prodigious quantity of bricks which it must consume. In the country round London there is a particular kind of clay, well known by the name of London clay. This clay is almost everywhere covered with a bed of gravel, which varies in thickness according to the elevation of the surface. Hence the whole of the country round London is fit for making bricks. Nothing more is necessary than to dig through the surface of gravel, and get to the clay.

We have already mentioned, that about a fourth part of the London bricks consists of small coal kneaded up along with the clay. When the bricks are sufficiently dry, they are piled up on each other in parallelopipedons to the intended height. Between each two rows of brick there is strewed a quantity of cinders, amounting to about three inches in thickness. At the distance of about nine feet from each other, perpendicular spaces are left, about a brick wide, which serve the purpose of flues. These

are made by arching the bricks over so as to leave a space between each about a brick in width. Over the whole is strewed a pretty thick covering of cinders. The flues are filled likewise with cinders, or, if they cannot be had, with coal. The fire-place is usually at the west end, and is generally three feet high. The fire, when once kindled in the fire-place, propagates itself very slowly through the whole *clamp*, as bricks piled in this manner are called. So very slow is the progress, that bricks in the neighbourhood of London take about three months in the burning. The heat is very intense, and, as the fuel is mixed up with the clay itself, every part of the brick is sure to be sufficiently burnt.

We conceive that the mixture of about one fourth of chalk with the clay of which the London bricks are made, would greatly improve their quality. The consequence would be an incipient fusion, which would render their surface much more compact and solid. The only difficulty would be to proportion the quantity of chalk so as to prevent complete fusion, which would run the bricks into each other, and destroy them entirely. Bricks made of materials which have undergone complete fusion would be greatly superior to common bricks. They would perfectly resist the action of the weather, and would, therefore, last much longer than common bricks. In Sweden it is customary at some of the iron founderies to cast the scoriæ into bricks, which they employ in constructing their furnaces. Such furnaces the writer of this article has seen; and he was assured by the gentleman who had the charge of the works, that they answered fully better than common bricks. It would be easy to make any quantity of such bricks in some of the large iron founderies of Great Britain. We are persuaded that such bricks might be brought into use for a variety of purposes with great advantage, and might even constitute a lucrative article of manufacture. Bricks made from the scoriæ of iron and copper founderies would vie in beauty with marble and porphyry, and would possess a lustre of surface to which few marbles could reach.

Few parts of Great Britain are so well adapted for the making of bricks, according to the London plan, as the neighbourhood of Newcastle-upon-Tyne. There the enormous heaps of small coal, which are of no use whatever, would furnish abundance of fuel at a much cheaper rate than even the London ashes; while the magnesian limestone that occurs in such plenty in the neighbourhood of Sunderland would enable the brickmaker to give the clay the requisite degree of fusibility.

As bricks form an article of taxation, and furnish a considerable revenue to government, their size has been regulated by act of parliament. They must not be less than eight and a half inches long, two and a half thick, and four inches wide. But, for various purposes, they are nevertheless made of very different and very considerable sizes.

Fire-bricks are made in the same way as common bricks, but the materials are different. The best clay for their composition is Stourbridge clay; and, instead of sand, it is usual to mix the clay with a quantity of old fire-bricks, or crucibles, or glass pots, reduced previously to powder. This mixture answers the same purposes as sand, while it does not communicate the tendency to fusion when it comes in contact with various fluxes that are communicated by siliceous sand.

There is a kind of bricks mentioned by Pliny as used by the ancients, which were so light as to swim in water.

“*Pitaneæ in Asia, et in ulterioribus Hispaniæ civitatibus Maxilua et Calento, fiunt lateres, qui ciccati non merguntur in aqua.*” (Plinii *Natur. Histor.* lib. xxxv. c. 14.) Pliny does not mention the part of the world in which the earth employed in the manufactures of these bricks was

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found, though in all probability it could not be far from the cities where the bricks are said by Pliny to have been made. He says that the material employed was a kind of pumice stone. But it was quite unknown to the moderns, till, in the year 1791, Fabroni found a substance at Castel del Piano, not far from Santa Fiora, situated between Tuscany and the Papal dominions, which formed bricks capable of swimming in water. This is a white earthy matter, which constitutes a bed in that place, and was known in Italy by the name of *Latte di Luna*. In more recent mineralogical books it is distinguished by the name of *farina fossilis (bergmehl)*. Haüy considers it as a variety of talc, and Brochant as a variety of meersch-chaum. According to the analysis of Fabbroni this substance is composed of

Silica.....	55
Magnesia.....	15
Alumina.....	12
Lime.....	3
Iron.....	1
Water.....	14

100

But it has been recently analysed by Klaproth, who found its constituents,

Silica.....	79
Alumina.....	5
Oxide of iron.....	3
Water.....	12
Loss.....	1

100

We see from this analysis that this mineral is neither a variety of talc nor of meerschchaum. One would be disposed to consider it as a hydrate of silica; for both the alumina and oxide of iron are present in so small proportions, that we can scarcely consider them as in chemical combination.

Considering the composition of this earth, it is rather singular that it is capable of being agglutinated by a red heat. We rather suspect that the bricks of Fabbroni, which swim in water, have but very little strength. This, if it be the case, must greatly circumscribe their utility.

The colour of the London bricks is not red, as is the case with common bricks and tiles, but a light brownish yellow. This colour is more pleasing to the eye than common brick red, and on that account the London bricks are preferred for building houses. The brick-makers assign a curious enough reason for this colour. According to them, their bricks are kept as much as possible from contact with the air during their burning. The consequence of this is, that the iron contained in them is not oxidized to so great a degree as in common bricks. But this mode of reasoning is far from being exact. If air were excluded entirely, the bricks would not be burnt at all, because the fire would be extinguished. But if enough of air be admitted to burn the coal mixed with the clay, which must be the case, that air must also act upon the iron, and reduce it to the state of peroxide. Indeed, there can be no doubt that the iron in the London yellow bricks is in the state of peroxide as well as in the red bricks, for the peroxide of iron gives various colours to bodies, according to circumstances. We find bodies tinged with it red, yellow, and brown, according to the substances with which the oxide is combined. We ascribe the yellow colour of the London bricks to the ashes of the coals, which, by uniting with the peroxides of iron, form a kind of yellow ochre. (L.)

Brick-Layer, an artificer, whose business is to build with bricks, or make brick-work. The London brick-layers form a regular company, which was incorporated in 1568,

and consists of a master, two wardens, twenty assistants, and seventy-eight on the livery.

Brick-Laying, the art of framing edifices of bricks. Moxon has written a treatise expressly on the art of brick-laying, in which he describes the materials, tools, and methods of working, used by brick-layers.

Great care is to be taken that bricks be laid joint on joint in the middle of the walls as seldom as may be; and that good bond be made there as well as on the outsides. Some brick-layers, in working a brick and half wall, lay the header on one side of the wall perpendicular to the header on the other side, and so all along the whole course; whereas, if the header on one side of the wall were toothed as much as the stretcher on the other side, it would be a stronger toothing, and the joints of the headers of one side would be in the middle of the headers of the course they lie upon of the other side. If bricks be laid in winter, they ought to be kept as dry as possible; if in summer, it will save cost to employ boys to wet them, for they will then unite better with the mortar than if dry, and make the work stronger. In large buildings, or where it is thought too much trouble to dip all the bricks separately, water may be thrown on each course after they are laid. If bricks be laid in summer they must be covered; for if the mortar dries too hastily, it will not bind so firmly to the bricks as when left to dry more gradually. If bricks be laid in winter they should also be well covered, to protect them from rain, snow, and frost; which last is a mortal enemy to mortar, especially where it has been wetted just before the frost assaults it. See BUILDING.

BRIDE, a newly-married woman. Among the Greeks it was customary for the bride to be conducted from her father's house to her husband's in a chariot, the evening being chosen for that purpose to conceal her blushes. She was placed in the middle, her husband sitting on one side, and one of her most intimate friends on the other; torches were carried before her, and she was entertained on the passage with a song suitable to the occasion. When they arrived at the end of the journey the axle-tree of the coach they rode in was burnt, to signify that the bride was never to return to her father's house. Amongst the Romans the semblance of ravishing by force the bride from her mother, was kept up in memory, it is said, of the rape of the Sabines under Romulus. She was carried home in the night-time to the bridegroom's house, accompanied by three boys, one of whom carried a torch, and the other two led the bride, while a spindle and distaff were carried with her. She brought three pieces of money, called asses, in her hand to the bridegroom, whose doors on this occasion were adorned with flowers and branches of trees. Being there interrogated who she was, she answered *Caia*, in memory of *Caia Cecilia*, wife of Tarquin the elder, who was an excellent *lanifica* or spinstress; and for a singular reason, before her entrance, she lined the door-posts with wool, and smeared them with grease. Fire and water being set on the threshold, she touched both; but, starting back from the door, refused to enter, till at length she passed the threshold, being careful to step over without touching it. Here the keys were given her, a nuptial supper was prepared, and minstrels attended; she was seated on the figure of a priapus, and in this situation the attendant boys resigned her to the *promuba*, who brought her into the nuptial chamber and put her to bed. This office was performed by matrons who had only been once married, to denote that the marriage was to be in perpetuity.

BRIDEGROOM, a newly-married man, the spouse of the bride. In nothing have the usages of different nations varied more than in regard to marriage, and the ceremonies by which it is celebrated or solemnized. Amongst

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groom.

Bridewell the Romans the bridegroom was decked to receive his bride; his hair was combed and cut in a particular form; he had a coronet or chaplet on his head, and was dressed in a white garment.

BRIDEWELL, a work-house, or place of correction for vagrants, and other disorderly persons.

BRIDEWELL, near Fleet-street, is a foundation of a mixed and singular nature, partaking of the characters of hospital, prison, and work-house. It was founded in 1553 by Edward VI., who gave the place where King John had

formerly kept his court, and which had been repaired by Henry VIII., to the city of London, with seven hundred marks of land, bedding, and other furniture. Several youths are sent to the hospital as apprentices to manufacturers, who reside there, and they are clothed in blue doublets and breeches, with white hats. Having faithfully served their time of seven years, they become entitled to their freedom, along with a donation of ten pounds each to enable them to carry on their respective trades.

BRIDGE.

THE mathematical theory of the structure of bridges has been a favourite subject with mechanical philosophers. It gives scope to some of the most refined and elegant applications of science to practical utility; and, at the same time that its progressive improvement exhibits an example of the very slow steps by which speculation has sometimes followed execution, it enables us to look forward with perfect confidence to that more desirable state of human knowledge in which the calculations of the mathematician shall direct the operations of the artificer with security, instead of following with servility the progress of his labours.

Of the origin of the art of building bridges something will be found in other parts of the work (see the article ARCH). The subject has been much discussed during the last half century, by some of the most learned antiquaries and most elegant scholars; but additions still more important have been made to the scientific and practical principles on which that art depends; and the principal information that may here be expected will be comprehended under the two heads of physico-mathematical principles, subservient to the theory of this department of architecture, and an historical account of the works which appear to be the most deserving of notice. The first head will contain three sections, relating respectively (1) to the resistance of the materials employed, (2) to the equilibrium of arches, and (3) to the effects of friction; the second will comprehend (4) some details of earlier history and literature, (5) an account of the discussions which have taken place respecting the improvement of the port of London, and (6) a description of some of the most remarkable bridges which have been erected in modern times.

SECT. I.—Of the Resistance of Materials.

A. *In all homogeneous solid bodies, the resistances to extension and compression must be initially equal, and proportional to the change of dimensions.*

The equilibrium of the particles of any body remaining at rest depends on the equality of opposite forces, varying according to certain laws; and that these laws are continued without any abrupt change, when any minute alteration takes place in the distance, is demonstrated by their continuing little altered by any variation of dimensions, in consequence of an increase or diminution of temperature, and might indeed be at once inferred as highly probable, from the general principle of continuity observed in the laws of nature. We may therefore always assume a change of dimensions so small, that, as in all other differential calculations, the elements of the curves, of which the ordinates express the forces, as functions of, or as depending on, the distances as abscissas, may be considered as not sensibly differing from right lines crossing each other, if the curves be drawn on the same side of the absciss, in a point corresponding to the point of rest, or to the distance affording an equilibrium; so that the ele-

mentary finite differences of the respective pairs of ordinates, which must form, with the portions of the two curves, rectilinear triangles, always similar to each other, will always vary as the lengths of the elements of the curves, or as the elements of the absciss, beginning at the point of rest; and it is obvious that these differences will represent the actual magnitude of the resistances exhibited by the substance to extension or compression. (Plate CXXXII. fig. 1.) (See Explanation of Plates at the conclusion of the article.)

It was on the same principle that Bernoulli long ago observed, that the minute oscillations of any system of bodies, whatever the laws of the forces governing them might be, must ultimately be isochronous, notwithstanding any imaginable variation of their comparative extent, the forces tending to bring them back to the quiescent position being always proportional to the displacements; and so far as the doctrine has been investigated by experiments, its general truth has been amply confirmed; the slight deviations from the exact proportion which have been discovered in some substances being far too unimportant to constitute an exception, and merely tending to show that these substances cannot have been perfectly homogeneous, in the sense here attributed to the word. When the compression or extension is considerable, there may indeed be a sensible deviation, especially in fibrous or stratified substances; but this irregularity by no means affects the admissibility of any of the conclusions which will be derived from this proposition.

B. *The strength of a block or beam must be reduced to one half, before its cohesive and repulsive forces can both be called into action.*

We must suppose the transverse sections of the body to remain plane and perpendicular to the axis, whatever the point may be to which the force is applied; a supposition which will be correctly true if the pressure be made by the intervention of a firm plate attached to each end, and which is perfectly admissible in every other case. Now, if the terminal plates remain parallel, it is obvious that the compression or extension must be uniformly distributed throughout the substance, which must happen when the original force is applied in the middle of the block; the centre of pressure or resistance collected by the plate acting like a lever, being then coincident with the axis. But when the plates are inclined, the resistance depending on the compression or extension will be various in different parts, and will always be proportional to the distance from the neutral point where the compression ends and the extension begins, if the depth of the substance is sufficient to extend to this point; consequently the forces may always be represented, like the pressure of a fluid, at different depths, by the ordinates of a triangle; and their result may be considered as concentrated in the centre of gravity of the triangle, or of such of its portions as are contained within the depth of the sub-

Bridge.

stance; and when both extension and compression are concerned, the smaller force may be considered as a negative pressure, to be subtracted from the greater, as is usual when any other compound forces are supposed to act on a lever of any kind. Now when the neutral point is situated in one of the surfaces of the block, the sum of all the forces is represented by the area of the triangle, as it is by that of the parallelogram when the plates remain parallel; and these areas being in either case equivalent to the same external force, it is obvious that the perpendicular of the triangle must be equal to twice the height of the parallelogram, indicating that the compression or extension of the surface in the one case is twice as great as the equable compression or extension in the other; and since there is always a certain degree of compression or extension, which must be precisely sufficient to crush or tear that part of the substance which is immediately exposed to it, and since the whole substance must in general give way when any of its parts fail, it follows that the strength is only half as great in the former case as in the latter. And the centre of gravity of every triangle being at the distance of one third of its height from the base, the external force must be applied, in order to produce such a compression or extension, at the distance of one sixth of the depth from the axis; and when this distance is greater than this, both the repulsive and cohesive forces of the substance must be called into action, and the strength must be still further impaired. (Plate CXXXII. fig. 2.)

C. *The compression or extension of the axis of a block or beam is always proportional to the force, reduced to the direction of the axis, at whatever distance it may be applied.*

We may suppose one of the inflexible plates attached to the extremities of the block to be continued to the given distance, and to act as a lever held in equilibrium by three forces, that is, by the cohesive and repulsive resistances of the block, and the external force; and it is obvious that, as in all other levers, the external force will always be equal to the difference of the other two forces depending on the compression and extension, or to the mean compression or extension of the whole, which must also be the immediate compression or extension of the middle, since the figure representing the forces is rectangular. And the effect will be the same, whatever may be the intermediate substances by which the force is impressed on the block, whether continued in a straight line or otherwise. When the force is oblique, the portion perpendicular to the axis will be resisted by the lateral adhesion of the different strata of the block, the compression or extension being only determined by the portion parallel to the axis; and when it is transverse, the length of the axis will remain unaltered. But the line of direction of the original force must always be continued till it meets the transverse section at any point of the length, in order to determine the nature of the strain at that point.

D. *The distance of the neutral point from the axis of a block or beam is to the depth, as the depth to twelve times the distance of the force, measured in the transverse section.*

Calling the depth a , and the distance of the neutral point from the axis z , the resistances may be expressed by the squares of $\frac{1}{2}a + z$ and $\frac{1}{2}a - z$, which are the sides of the similar triangles denoting the compression and extension (Prop. B.); consequently, the difference of these squares, $2az$, will represent the external force (Prop. C.) But the distance of the centres of gravity of the two triangles must always be $\frac{2}{3}a$; and, by the property of the lever, making the centre of action of the greater resistance the fulcrum, as the external force is to the smaller resistance, so is this distance to the distance of the force from the centre of action of the greater re-

stance; or $2az : (\frac{1}{2}a + z)^2 = \frac{2}{3}a : (\frac{aa}{12z} - \frac{a}{3} + z)$; Bridge.

and adding to this the distance of the centre of action from the axis, which must be $\frac{1}{2}a - \frac{1}{3}(\frac{1}{2}a + z) = \frac{1}{3}a - \frac{1}{3}z$,

we have $\frac{aa}{12z}$ for the distance of the force from the axis;

whence, calling this distance y , $z = \frac{aa}{12y}$.

E. *The power of a given force to crush a block is increased by its removal from the axis, supposing its direction unaltered, in the same proportion as the depth of the block is increased by the addition of six times the distance of the point of application of the force, measured in the transverse section.*

Since the compression or extension of the axis is inviolable, whatever the distance of the force may be, that of the nearest surface must be as much greater, by the properties of similar triangles, as the half depth, increased by the distance of the neutral point, is greater than that distance itself, that is, in the ratio of $a + 6y$ to a , since z is to a as a to $12y$ (Prop. D.), and to $\frac{1}{2}a$ as a to $6y$; and the strength is reduced in the same proportion as the partial compression or extension, by the operation of a given force, is increased. (Plate CXXXII. fig. 3.)

F. *The curvature of the neutral line of a beam at any point, produced by a given force, is proportional to the distance of the line of direction of the force from the given point of the axis, whatever that direction may be.*

Since the distance z of the neutral point from the axis is inversely as y , the distance of the force, and the radius of curvature, or the distance of the intersection of the planes of the terminal plates from the neutral point, must be to the distance z as the whole length of the axis is to the alteration of that length produced by the compression or extension, it follows that the radius of curvature must be inversely as the distance y , and inversely also as the compression, and the curvature itself must be conjointly as the force and as the distance of its application. If the direction of the force be changed, and the perpendicular falling from the given point of the axis on the line of the force be now called y , the distance of the force from the axis measured in the transverse section will be increased by the obliquity exactly in the same ratio as its efficacy is diminished, and the curvature of the neutral line will remain unaltered; although the place of that line will be a little varied, until at last it coincides with the axis, when the force becomes completely transverse: and the radius of curvature of the axis will always be to that of the neutral line as the acquired to the original length of the axis. (Plate CXXXII. fig. 4.)

G. *The radius of curvature of the neutral line is to the distance of the neutral point as the original length of the axis to the alteration of that length, or as a certain given quantity to the external force; and this quantity has been termed the modulus of elasticity.*

Or $r : z = M : f$, and $r = \frac{Mz}{f} = \frac{Maa}{12fy}$, as is obvious from

the preceding demonstration; y being the distance of the line of the force from the given point, whatever its direction may be.

H. *The flexibility, referred to the direction of the force, is expressed by unity, increased by twelve times the square of the distance, divided by that of the depth.*

Making the alteration of the axis unity, the corresponding change at the distance y will be to 1 as $z + y$ to z ,

or as $1 + \frac{y}{z}$ to 1, and will consequently be equal to

$1 + \frac{12yy}{aa}$ (Prop. D.)

Bridge. When the direction of the force becomes oblique, the actual compression of the axis is diminished, but its effect referred to that direction remains unaltered.

I. *The total compression of a narrow block, pressed in the direction of one of its diagonals, is twice as great as if the same force were applied in the direction of the axis.*

This proposition affords a simple illustration of the application of the preceding one. Calling the length of any portion of the axis x , beginning from the middle, and neglecting the obliquity, the distance of the force may be called $y = nx$; and the compression in the line of the force being everywhere as $1 + \frac{12yy}{aa}$, its fluxion will be

$$dx + dx \frac{12nxx}{aa}, \text{ and the fluent } x + \frac{4n^2x^3}{3a}, \text{ which, when}$$

$y = \frac{1}{2}a$, becomes $x + x$, which is twice as great as if y were always $= 0$. But if the breadth of the block were considerable, so that it approached to a cube, the compression would vary according to a different law, each section parallel to the diagonal affording an equal resistance, and the exact solution of the problem would require an infinite series for expressing the value of $\int n^{\frac{1}{2}} dx$.

K. *If a solid bar have its axis curved a little into a circular form, and an external force be then applied in the direction of the chord, while the extremities retain their angular position, the greatest compression or extension of the substance will ultimately be to the mean compression or extension which takes place in the direction of the chord, as $1 + \frac{4h}{a}$ to $1 + \frac{16hh}{15aa}$; a being the depth of the bar, and h the actual versed sine, or the height of the arch.*

We must here separate the actions of the forces retaining the ends of the bar into two parts, the one simply urging the bar in the direction of the chord, and the other, which is of a more complicated nature, keeping the angular direction unaltered; and we must first calculate the variation of the angular situation of the ends, in consequence of the bending of the bar by the first portion, and then the strain required to obviate that change, by means of a force acting in the direction of the middle of the bar, while the ends are supposed to be fixed. If each half of the bar were rectilinear, these two strains would obviously be equal, and would neutralize each other in the middle of the halves, which might be considered as the meeting of the ends of two shorter pieces, acting transversely or obliquely on each other, without any strain; the curvature produced by the whole strain being elsewhere as the distance from the line joining these points. But since the bar is supposed to be curved, it becomes necessary to determine the place of these neutral points, by calculating the change of its angular position throughout its extent.

Considering, first, the middle of the bar as fixed, and calling the angular extent of the variable arc x , beginning from the middle, and the radius r , the ordinate y , or the distance of the arc from the chord, will be $r \cos. x - b$, b being the cosine of the whole arc; and the fluxion of the change of the angular situation, being as the strain and the fluxion of the arc conjointly, will be expressed by $pr \cos. x dx - p b dx$, of which the fluent is $pr \sin. x - p b x$. In the second place, the curvature derived from the force acting between the two halves, when the ends are considered as fixed points, will be as $r - r \cos. x$, and the fluent of the change of angular situation may be called $qrx - qr \sin. x$; and at the end, when x becomes equal to

Bridge. c , the whole extent of the arc, these two deviations must destroy each other, since the positions of the middle and of the ends remain unaltered; consequently $pr \sin. c - p b c$

$$= qrc - qr \sin. c, \text{ whence } \frac{p}{q} = \frac{rc - r \sin. c}{r \sin. c - bc}, \text{ and the exact}$$

proportion of p to q may be found by means of a table of sines. But when the arc is small, $\sin. c$ being equal to

$$c - \frac{1}{6}c^3 + \frac{1}{120}c^5 \dots, rc - r \sin. c \text{ is } \frac{1}{6}rc^3, \text{ and } r \sin. c - bc$$

$= (r - b)c - \frac{1}{6}rc^3$; now $r - b$, the versed sine of the arc, becomes ultimately $\frac{1}{2}rc^2$, and $(r - b)c = \frac{1}{2}rc^3$; therefore $p : q = \frac{1}{6} : \frac{1}{2} = \frac{1}{3} : 1$; that is, the strain at the middle, expressed by p , must be half as great as the strain at the ends, expressed by q : consequently, when the force is considered as single, the distance of the line of its direction from the summit must ultimately be one third of the versed sine or height.

Now if we call any portion of the chord x , we have for the corresponding value of y , the distance from the line of direction of this force, $\sqrt{(r^2 - x^2)} - d$; and for the fluxion of the compression or extension in the direction of

$$\text{the chord, } dx \left(1 + \frac{12yy}{aa} \right), \text{ which will be true for both por-}$$

tions of the bar, whether y be positive or negative; but $y^2 = r^2 - x^2 + d^2 - 2d \sqrt{(r^2 - x^2)}$, and the fluent be-

$$\text{comes } x + \frac{12}{aa} \left(r^2x - \frac{1}{2}x^3 + d^2x - 2d [r^2 \text{ARC SINE } \frac{x}{r} - x \sqrt{(r^2 - x^2)}] \right).$$

When the arc is small, calling the whole versed sine h , we may have $y = \frac{1}{2}h - \frac{xx}{2r}$ and $y^2 = \frac{1}{4}h^2 - \frac{hx^2}{3r}$

$$+ \frac{x^4}{4r^2}, \text{ and the fluent is } x + \frac{12}{aa} \left(\frac{1}{4}h^2x - \frac{hx^3}{9r} + \frac{x^5}{20r^2} \right);$$

but when x becomes equal to the semichord c , h being $\frac{ce}{2r}$,

$$\text{the expression becomes } c + \frac{12}{aa} \left(\frac{c^5}{36r^2} - \frac{c^5}{18r^2} + \frac{c^5}{20r^2} \right)$$

$$= c + \frac{4c^5}{15a^2r^2} = c + \frac{16h^2c}{15a^2}, \text{ which shows the compres-}$$

sion or extension in the line of the chord, while c expresses that which the bar would have undergone if it had been straight, and the force had been immediately applied to the axis; the actual change being greater in the proportion of $1 + \frac{16hh}{15aa}$ to 1.

The greatest strain will obviously be at the ends, where the distance from the line of direction of the force is the greatest, the compression or extension of the surface being here to that of the axis as $a + 6y$ to a (Prop. E.), or

$$\text{as } 1 + \frac{4h}{a} \text{ to } 1; \text{ consequently the compression or exten-}$$

sion in the line of the chord is to the greatest actual

$$\text{change of the substance as } 1 + \frac{16hh}{15aa} \text{ to } 1 + \frac{4h}{a}.$$

Thus if the depth a were 10 feet, and the height or versed sine $h = 20$, the radius being very large, the whole compression of the chord would be to the whole compression of a similar substance, placed in the direction of the chord, as 5.267 to 1; and the compression at the surface of the ends would be to the compression of the axis there as 9 to 1; and, disregarding the insensible obliquity, this compression may be considered as equal throughout the bar, so that the compression at the ends will be to the compression of the chord as 9 to 5.267, or as 17 to 10.

Bridge.

Supposing, for example, such a bar of iron to undergo a change of temperature of 32° of Fahrenheit, which would naturally cause it to expand or contract about $\frac{1}{3000}$ in all its dimensions; then the length of the chord, being limited by the abutments, must now be supposed to be altered $\frac{1}{3000}$ by an external force; and, at the extremities of the abutments, the compression and extension of the metal will amount to about $\frac{1}{3000}$; a change which is equivalent to the pressure of a column of the metal about 3300 feet in height, since M , the height of the modulus of elasticity, is found, for iron and steel, to be about 10,000,000 feet; and such would be the addition to the pressure at one extremity of the abutment, and its diminution at the other, amounting to about five tons for every square inch of the section, which would certainly require some particular precaution, to prevent the destruction of the stones forming the abutment by a force so much greater than they are capable of withstanding without assistance. Should such a case indeed actually occur, it is probable that the extremities would give way a little, and that the principal pressure would necessarily be supported nearer the middle, so that there would be a waste of materials in a situation where they could co-operate but imperfectly in resisting the thrust; an inconvenience which would not occur if the bar were made wider and less deep, especially towards the abutments.

SECT. II.—Of the Equilibrium of Arches.

We may now proceed to inquire into the mode of determining the situation and properties of the curve of equilibrium, which represents, for every part of a system of bodies supporting each other, the general direction of their mutual pressure; remembering always that this curve is as much an imaginary line as the centre of gravity is an imaginary point, the forces being no more actually collected into such a line than the whole weight or inertia of a body is collected in its centre of gravity. Indeed the situation of the curve is even less definite than that of the centre of gravity, since in many cases it may differ a little according to the nature of the co-operation of the forces which it is supposed to represent. In reality, every gravitating atom entering the structure must be supported by some forces continued in some line, whether regular or irregular, to the fixed points or abutments, and every resisting atom partakes, in a mathematical sense, either positively or negatively in transmitting a lateral pressure where it is required for supporting any part of the weight; and when we attempt to represent the result of all these collateral pressures by a simple curve, its situation is liable to a slight variation, according to the direction in which we suppose the co-operating forces to be collected. If, for instance, we wished to determine the stability of a joint formed in a given direction, it would be necessary to consider the magnitude of the forces acting throughout the extent of the joint in a direction perpendicular to its plane, and to collect them into a single result; and it is obvious that the forces represented by the various elementary curves may vary very sensibly in their proportion, when we consider their joint operation on a vertical or on an oblique plane; although, if the depth of the substance be inconsiderable, this difference will be wholly imperceptible, and in practice it may generally be neglected without inconvenience; calculating the curve upon the supposition of a series of joints in a vertical direction. If, however, we wish to be very minutely accurate, we must attend to the actual direction of the joints in the determination of the curve, and must consider, in the case of a bridge, the whole weight of the structure terminated by a given arch-stone, with the ma-

terials which it supports, as determining the direction of the curve of equilibrium where it meets the given joint, instead of the weight of the materials terminated by a vertical plane passing through the point of the curve in question, which may sometimes be very sensibly less; this consideration being as necessary for determining the circumstances under which the joints will open, as for the more imaginary possibility of the arch-stones sliding upwards or downwards. But we may commonly make a sufficiently accurate compensation for this difference, by supposing the specific gravity of the materials producing the pressure, and the curvature of the line which terminates them, to be a little increased, while the absciss remains equal to that of the curve of equilibrium intersecting the joints.

L. If two equal parallelopipeds be supported each at one end, and lean against each other at the other, so as to remain horizontal, the curve of equilibrium, representing the general effect of the pressure transmitted through them, will be of a parabolic form.

The pressure of the blocks where they meet will obviously be horizontal, but at the other ends it will be oblique, being the result of this horizontal pressure and of the whole weight of each block. And if we imagine the blocks to be divided into any number of parts, by sections parallel to the ends, which is the only way in which we can easily obtain a regular result, it is evident that the force exerted at any of these sections by the external portions must be sufficient to support the lateral thrust and the weight of the internal portions; and its inclination must be such that the horizontal base of the triangle of forces must be to the vertical perpendicular as the lateral thrust to the weight of the internal portion; or, in other words, the lateral thrust remaining constant, the weight supported will be as the tangent of the inclination. But calling the horizontal absciss x , and the vertical ordinate y ,

the tangent of the inclination will be $\frac{dy}{dx}$; which, in the case

of a parallelopiped, must be proportional to the distance

x from the contiguous ends; and $x = \frac{m dy}{dx}$; consequent-

ly $x dx = m dy$, and $\frac{1}{2} x^2 = m y$, which is the equation of a parabola. It is usual in such cases to consider the thrusts as rectilinear throughout, and as meeting in the vertical line passing through the centre of gravity of each block; but this mode of representation is evidently only a convenient compendium.

If the blocks were united together in the middle, so as to form a single bar or lever, the forces would be somewhat differently arranged; the upper half of the bar would contain a series of elementary arches, abutting on a series of similar elementary chains in the lower half, so as to take off all lateral thrust from the supports at the ends.

With respect to the transverse strains of levers in general, it may be observed, that the most convenient way of representing them is to consider the axis of the lever as composed of a series of elementary bars, bisected, and crossed at right angles, by as many others extending across the lever, or rather as far as two thirds of the half depth on each side, where the centre of resistance is situated. The transverse force must then be transmitted unaltered throughout the whole system, acting in contrary directions at the opposite ends of each of the elementary bars constituting the axis; and it must be held in equilibrium, with respect to each of the centres, considered as a fulcrum, by the general result of all the corpuscular forces acting on the longer cross arms; that is, by the difference of the compression or extension on the different sides of the arms. This difference must therefore be

idge. constant; and in all such cases the strain or curvature must increase uniformly, and its fluxion must be constant; but if the transverse force be variable, as when the lever supports its own weight, or any further external pressure, the fluxion of the curvature must be proportional to it. Now the transverse force, thus estimated, being the sum of the weights or other forces acting on either side of the given point, the additional weight at the point will be represented by the fluxion of the weight, or by the second fluxion of the strain or curvature, which is ultimately as the fourth fluxion of the ordinate. Also the fluxion of the strain being as the whole weight on each side, it follows, that when the strain is a maximum, and its fluxion vanishes, the whole weight, or the sum of the positive and negative forces on either side, must also vanish; as Mr Dupin has lately demonstrated in a different manner.

M. *In every structure supported by abutments, the tangent of the inclination of the curve of equilibrium to the horizon is proportional to the weight of the parts interposed between the given point and the middle of the structure.*

The truth of this proposition depends on the equality of the horizontal thrust throughout the structure, from which it may be immediately inferred, as in the last proposition. The materials employed for making bridges are not uncommonly such as to create a certain degree of lateral pressure on the outside of the arch; but as there must be a similar and equal pressure in a contrary direction against the abutment, its effects will be comprehended in the determination of the point at which the curve springs from the abutment, as well as in the direction of the curve itself; so that the circumstance does not afford any exception to the general truth of the law. It is, however, seldom necessary to include the operation of such materials in our calculations, since their lateral pressure has little or no effect at the upper part of the arch, which has the greatest influence on the direction of the curve; and it is also desirable to avoid the unnecessary employment of these soft materials, because they tend to increase the horizontal thrust, and to raise it to a greater height above the foundation of the abutment.

We have therefore generally $\int w dx = mt = m \frac{dy}{dx}$, w being the height of uniform matter, pressing on the arch at the horizontal distance x from the vertex, t the tangent of the inclination of the curve of equilibrium, y its vertical ordinate, and m a quantity proportional to the lateral pressure or horizontal thrust.

N. *The radius of curvature of the curve of equilibrium is inversely as the load on each part, and directly as the cube of the secant of the angle of inclination to the horizon.*

The general expression for the radius of curvature is $r = \frac{(dz)^3}{dx d^2y}$; and here, since $m dy = dx \int w dx$, dx being constant, $md^2y = w(dx)^2$; but dz being $= dx \sqrt{1+t^2}$, $\frac{(dz)^2}{ddy} = \frac{m}{w} (1+t^2)$, and $r = \frac{m}{w} (1+t^2)^{\frac{3}{2}}$; and m being constant, r is inversely as the load w , and directly as the cube of the secant $\sqrt{1+t^2}$. The same result may also be obtained from a geometrical consideration of the magnitude of the versed sine of the elementary arc, and the effect of the obliquity of the pressure; the one varying as the square of the secant, the other as the secant simply.

O. *Consequently, if the curve be circular, the load must be everywhere as the cube of the secant.*

P. *If the curve of equilibrium be parabolic, the load must be uniform throughout the span.*

(Prop. L.) The uniformity of the load implies that the superior and inferior terminations of the arch, commonly called the extrados and intrados, should be parallel; but it is not necessary that either of them should be parabolic, unless we wish to keep the curve exactly in the middle of the whole structure. When the height of the load is very great in proportion to that of the arch, the curve must always be nearly parabolic, because the form of the extrados has but little comparative effect on the load at each point.

A parabola will therefore express the general form of the curve of equilibrium in the flat bands of brick or stone, commonly placed over windows and doors, which, notwithstanding their external form, may very properly be denominated flat arches. But if we consider the direction of the joints as perpendicular to the curve, it may easily be shown, from the properties of the wedge, that they must tend to a common axis, in order that the thrust may be equal throughout; and the curve must be perpendicular to them, and consequently circular; but the difference from the parabola will be wholly inconsiderable.

Q. *For a horizontal extrados, and an intrados terminated by the curve itself, which, however, is a supposition merely theoretical, the equation of the curve is*

$$x = \sqrt{m} \text{ HYP. LOG. } \frac{y + \sqrt{(yy - aa)}}{a}.$$

Since in this case $w = y$ (Prop. M.), we have $\int y dx = m \frac{dy}{dx}$, and $md^2y = y(dx)^2$; whence, multiplying both sides by dy , we have $mdy d^2y = y dy (dx)^2$; and, taking the fluent, $\frac{1}{2} m (dy)^2 = \frac{1}{2} y^2 (dx)^2$, and $mt^2 = y^2$, which must be corrected by making $y = a$ when t vanishes, so that we shall have $mt^2 = y^2 - a^2$, and $y = \sqrt{(a^2 + mt^2)}$. But since $\frac{dy}{dx}$

$= t = \sqrt{\frac{yy - aa}{m}}$, $dx = dy \sqrt{\frac{m}{(yy - aa)}}$, and $x = \sqrt{m} \text{ HL } (y + \sqrt{y^2 - a^2}) - \sqrt{m} \text{ HL } a$; whence all the points of the curve may be determined by means of a table of logarithms. But such a calculation is by no means so immediately applicable to practice as has generally been supposed; for the curve of equilibrium will always be so distant from the intrados at the abutments, as to derange the whole distribution of the forces concerned.

R. *For an arch of equable absolute thickness throughout its length, the equation is $z = \sqrt{(y^2 - m^2)}$ and*

$$x = m \text{ HL } \frac{y + \sqrt{(yy - mm)}}{m}.$$

The weight of any portion of the half arch being represented by its length z , we have $z = m \frac{dy}{dx}$; but $dz = dy$

$\sqrt{1 + \left(\frac{dx}{dy}\right)^2} = dy \sqrt{1 + \frac{mm}{zz}}$, and $dy = \frac{dz}{\sqrt{1 + \frac{mm}{zz}}}$
 $= \frac{z dz}{\sqrt{(zz + mm)}}$, of which the fluent is $\sqrt{(z^2 + m^2)}$, requiring no further correction than to suppose y initially equal to m ; and we have $z = \sqrt{(y^2 - m^2)}$. Again, since

$dz = dx \sqrt{1 + \frac{zz}{mm}}$, we find in the same manner $dx =$

$\frac{m dz}{\sqrt{(nm + zz)}}$, and $x = m \text{ HL } (z + \sqrt{mm + zz}) - m \text{ HL } m$

Bridge.

Bridge. $= m \text{ HL } \frac{z+y}{m}$. This curve will therefore in some cases

be identical with that of the preceding proposition. It is commonly called the catenaria, since it represents the form in which a perfectly flexible chain of equable thickness will hang by its gravity.

S. If the load on each point of an arch be expressed by the equation $w = a + bx^2$, the equation for the curve of equilibrium will be $my = \frac{1}{2} ax^2 + \frac{1}{12} bx^4$.

Since the whole load $\int w dx$ is here $ax + \frac{1}{2} bx^3$, we have $m \frac{dy}{dx} = ax + \frac{1}{3} bx^3$ (Prop. M.), and $my = \frac{1}{2} ax^2 + \frac{1}{12} bx^4$.

This expression will, in general, be found sufficiently accurate for calculating the form of the curve of equilibrium in practical cases; and it may easily be made to comprehend the increase of the load from the obliquity of the arch-stones. The ordinate y at the abutment being given, the value of m may be deduced from it; and since at the vertex my is simply $\frac{1}{2} ax^2$, the radius of curvature r will here be $\frac{xx}{2y} = \frac{m}{a}$.

T. If we divide the span of an arch into four equal parts, and add to the weight of one of the middle parts one sixth of its difference from the weight of one of the extreme parts, we shall have a reduced weight, which will be to the lateral thrust as the height of the arch to half the span, without sensible error.

The weight of the half arch being expressed by $ax + \frac{1}{3} bx^3$ when x is equal to the whole span, if we substitute x for $\frac{1}{2} x$, it will become $\frac{1}{2} ax + \frac{1}{24} bx^3$ for one of the middle parts, leaving $\frac{1}{2} ax + \frac{7}{24} bx^3$ for the extreme part, which gives $\frac{6}{24} bx^3$ for the difference of the parts, and one sixth of this added to the former quantity makes it $\frac{1}{2} ax + \frac{1}{12} bx^3$:

but since $my = \frac{1}{2} ax^2 + \frac{1}{12} bx^4$, dividing by mx , we have $\frac{y}{x} = \frac{\frac{1}{2} ax + \frac{1}{12} bx^3}{m}$.

It is also obvious, that if we subtract, instead of adding, one sixth of the difference, we have $\frac{1}{2} ax$; and dividing by $\frac{1}{2} x$, we obtain a , and thence $r = \frac{m}{a}$, m being previously found by the proposition.

U. When the load is terminated by a circular or elliptical arc, $w = a + nb - n \sqrt{(b^2 - x^2)}$ and $my = \frac{1}{2} (a + nb) x^2 - \frac{1}{2} nb^2 x \text{ ARCSINE } \frac{x}{b} - \frac{1}{2} nb^2 \sqrt{(b^2 - x^2)} + \frac{1}{6} n (b^2 - x^2)^{\frac{3}{2}} + \frac{1}{3} nb^2$.

The whole load $\int w dx$ is here $ax + nbx - \frac{1}{2} nb^2 \text{ ARCSINE } \frac{x}{b} - \frac{1}{2} nx \sqrt{(b^2 - x^2)}$; and hence $my = \frac{1}{2} ax^2 + \frac{1}{2} nbx^2 - \frac{1}{2} nb^2 x \text{ ARCSINE } \frac{x}{b} + \frac{1}{2} nb^3 - \frac{1}{2} nb^2 \sqrt{(b^2 - x^2)} + \frac{1}{6} n (b^2 - x^2)^{\frac{3}{2}} - \frac{1}{6} nb^3$ (Prop. M.) And the radius of curvature at the vertex will again be $\frac{m}{a}$. When the

curve is circular, the axes of the ellipse being equal, $n = 1$.

If the extrados and intrados are concentric, the calculation requires us to take the difference between the results determining the weight for each curve; but it will commonly be equally accurate, in such a case, to consider the depth of the load as uniform, at least when the joints are in the direction of the radii.

X. The abutment must be higher without than within, by a distance which is to its breadth as the horizontal distance of the centre of gravity of the half arch from the middle of the abutment is to the height of the middle of the key-stone above the same point.

This proposition follows immediately from the proportion of the horizontal thrust to the weight, determined by the property of the lever; the one acting at the distance of the height of the arch from the fulcrum, and the other at the distance of the centre of gravity from the abutment, so as to balance each other; and the oblique direction of the face of the abutment being perpendicular to the thrust compounded of these two forces. The same rule also serves for determining the proper position of the abutment of a beam or rafter of any kind, in order that it may stand securely, without the assistance of friction. But for a bridge, if we calculate the situation of the curve of equilibrium, we obtain the direction of the thrust at its extremity more conveniently, without immediately determining the place of the centre of gravity.

Y. In order that an arch may stand without friction or cohesion, a curve of equilibrium, perpendicular to all the surfaces of the joints, must be capable of being drawn within the substance of the blocks.

If the pressure on each joint be not exactly perpendicular to the surfaces, it cannot be resisted without friction, and the parts must slide on each other; this, however, is an event that can never be likely to occur in practice. But if the curve, representing the general pressure on any joint, be directed to a point in its plane beyond the limits of the substance, the joint will open at its remotest end, unless it be secured by the cohesion of the cements, and the structure will either wholly fall, or continue to stand in a new form. (Plate CXXXII. fig. 5.)

From this condition, together with the determination of the direction of the joints already mentioned (Prop. P.), we may easily find the best arrangement of the joints in a flat arch: the object, in such cases, being to diminish the lateral thrust as much as possible, it is obvious that the common centre of the joints must be brought as near to the arch as is compatible with the condition of the circle remaining within its limits; and it may even happen that the superincumbent materials would prevent the opening of the joints even if the centre were still nearer than this; but if, on the other hand, the arch depended only on its own resistance, and the materials were in any danger of being crushed, it would be necessary to keep the circle at some little distance from its surfaces, even at the expense of somewhat increasing the lateral pressure.

When the curve of equilibrium touches the intrados of an arch of any kind, the compression at the surface must be at least four times as great as if it remained in the middle of the arch-stones (Prop. E.), and still greater than this if the cohesion of the cements is called into action. In this estimate we suppose the transverse sections of the blocks inflexible, so as to co-operate throughout the depth in resisting the pressure on any point; but in reality this co-operation will be confined within much narrower limits, and the diminution of strength will probably be considerably greater than is here supposed, whenever the curve approaches to the intrados of the arch.

The passage of the curve of equilibrium through the

middle of each bloek is all that is necessary to insure the stability of a bridge of modern dimensions and of sound materials. Its strength is by no means increased, like that of a frame of carpentry, or of a beam resisting a transverse force, by an increase of its depth in preference to any other of its dimensions: a greater depth does, indeed, give it a power of effectually resisting a greater force of external pressure derived from the presence of any occasional load on any part of the structure; but the magnitude of such a load is seldom very considerable, in proportion to the weight of the bridge.

It is of some importance, in these investigations, to endeavour to trace the successive steps by which the fabric of a bridge may commonly be expected to fail. Supposing the materials to be too soft, or the abutments insecure, or any part of the work to be defective, and to afford too little resistance, the length of the curve of the arch being diminished, or its chord extended, it will become flatter, and consequently sink; the alteration being by far the greatest, if other things are equal, where the depth is the least, that is, near the crown or key-stone; so that if the curvature was at first nearly equal throughout, the crown will sink so much as to cause a rapid increase of curvature on each side in its immediate neighbourhood, which will bring the intrados up to the curve of equilibrium, or even above it, the form of this curve being little altered by the change of that of the arch. The middle remains firm, because the pressure is pretty equally divided throughout the blocks; but the parts newly bent give way to the unequal force, and chip a little at their internal surface; but being reduced in their dimensions by the pressure, they suffer the middle to descend still lower, and are consequently carried down with it, so as to be relieved from the inequality of pressure depending on their curvature, and to transfer the effect to the parts immediately beyond them, till these in their turn crumble, and by degrees the whole structure falls. (Plate CXXXII. fig. 6.)

SECT. III.—Of the Effect of Friction.

The friction or adhesion of the substances employed in architecture is of the most material consequence for insuring the stability of the works constructed with them, and it is right that we should know the extent of its operation. It is not, however, often practically necessary to calculate its exact magnitude, because it would seldom be prudent to rely materially on it, the accidental circumstances of agitation or moisture tending very much to diminish its effect. Nor is the cohesion of the cements employed of much farther consequence than as enabling them to form a firm connection, by means of which the blocks may rest more completely on each other than they could do without it; for we must always remember that we must lose at least half of the strength, before the cohesion of the solid blocks themselves, in the direction of the arch, can be called into action, and at least three fourths before the joints will have any tendency to open throughout their extent.

Z. The joints of an arch, composed of materials subject to friction, may be situated in any direction lying within the limits of the angle of repose, on either side of the perpendicular to the curve of equilibrium; the angle of repose being equal to the inclination to the horizon at which the materials begin to slide on each other; and the direct friction being to the pressure as the tangent of this angle is to the radius.

It is obvious, that any other force as well as that of gravity will be resisted by the friction or adhesion of the surfaces when its direction is within the limits of the angle at which the substances begin to slide; and it may be inferred from the experiments of Mr Coulomb and Profes-

sor Vinee, that this angle is constant, whatever the magnitude of the force may be, since the friction is very nearly proportional to the mutual pressure of the substances. The tendency of a body to descend along any plane being as much less than its weight as the height of the plane is less than its length, and the pressure on the plane being as much less than the weight as the length is greater than the horizontal extent, it follows, that, when the weight begins to overcome the friction, the friction must be to the pressure as the height of the plane to its horizontal extent, or as the tangent of the inclination to the radius.

This property of the angle of repose affords a very easy method of ascertaining, by a simple experiment, the friction of the materials employed. Taking, for example, a common brick, and placing it, with the shorter side of its end downwards, on another which is gradually raised, we shall find that it will fall over without beginning to slide; and when this happens, the height must be half of the horizontal extent, a brick being twice as long as it is broad. In this case, therefore, the friction must be at least half of the pressure, and the angle of repose at least 30° ; and an equilateral wedge of brick could not be forced up by any steady pressure of bricks acting against its sides, in a direction parallel to its base. But the effects of agitation would make such a wedge totally insecure in any practical case; and the determination only serves to assure us, that a very considerable latitude may be allowed to the joints of our materials, when there is any reason for deviating from the proper direction, provided that we be assured of a steady pressure; and much more in brick or stone than in wood, and more in wood than in iron, unless the joints of the iron be secured by some cohesive connection. It may also be inferred from these considerations, that the direction of the joints can never determine the direction of the curve of equilibrium crossing them, since the friction will always enable them to transmit the thrust in a direction varying very considerably from the perpendicular; although, with respect to any particular joint, of which we wish to ascertain the stability independent of the friction, it would be desirable to collect the result of the elements of which that curve is the representative, with a proper regard to its direction.

SECT. IV.—Earlier Historical Details.

The original invention of arches, and the date of their general adoption in architecture, have been discussed with great animation by Mr King, Mr Dutens, and several other learned antiquaries. Mr King insisted that the use of the arch was not more ancient than the Christian era, and considered its introduction as one of the most remarkable events accompanying that memorable period. Mr Dutens appealed to the structure of the eloacæ, built by the Tarquins, and to the authority of Seneca, who observes that the arch was generally considered as the invention of Demoeritus, a philosopher who lived some centuries before the birth of Christ, but that, in his opinion, the simplicity of the principle could not have escaped the rudest architect; and that, long before Demoeritus, there must have been both bridges and doors, in both of which structures the arch was commonly employed. There do indeed appear to be solitary instances of arches more ancient than the epoch assigned by Mr King to their invention. We find arches concealed in the walls of some of the oldest temples extant at Athens. The eloacæ are said to be arched, not at the opening into the Tiber only, but to a greater distance within it than is likely to have been rebuilt at a later period for ornament; and the fragments of a bridge, still remaining at Rome, bear an inscription which refers its erection to the latter

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years of the Commonwealth. But it seems highly probable that almost all the covered ways constructed in the earlier times of Greece and Rome, were either formed by lintels, like doorways, or by stones overhanging each other in horizontal strata, and leaving a triangular aperture, or by both of these arrangements combined, as is exemplified in the entrance to the treasury of Atreus at Mycenæ, where the lintel has a triangular aperture over it, by which it is relieved from the pressure of the wall above; and this instance serves to show how different the distribution of the pressure on any part of a structure may be, from the simple proportions of the height of the materials above it. Some other old buildings, which have been supposed to be arched, have been found, on further examination, rather to resemble domes, which may be built without centres, and may be left open at the summit, the horizontal curvature producing a transverse pressure, which supports the structure without an ordinary key-stone. And this has been suspected to be the form of the roofs and ceilings of ancient Babylon, were Strabo tells us that the buildings were arched over, or "camerated," for the purpose of saving timber; and the bridge of Babylon, which must have been of considerable antiquity, is expressly said, by Herodotus, to have consisted of piers of stone, with a road formed of beams of wood only. It may however be rejoined, that though a dome is not simply an arch, yet it exceeds it in contrivance and mechanical complication; it generally exerts a thrust, and requires either an abutment or a circular tie; and it is scarcely possible that the inventor of a dome should not have been previously acquainted with the construction of a common arch. Besides the term CAMARA, the Greeks had also PSALIS, APSIS, and THOLUS, the last of which was particularly appropriate to circular domes; but the variety of appellations seems to prove that the thing must have been perfectly familiar; and the term PSALIS is supposed to have been applied from the appearance of the wedged arch-stones, viewed in their elevation, which could not have been observable in a dome of any kind.

From these outlines of the origin of the art of building bridges, we may pass on rapidly to the latest improvements which have been made in Great Britain and on the Continent in the practice of this department of architecture. A very ample detail of the most important operations that are generally required to be performed in it, may be found in the numerous Reports of the ingenious Mr Smeaton, published since his death by the Society of Civil Engineers in London. They contain a body of information comprehending almost every case that can occur to a workman in the execution of such structures; and even where they have to record an accidental failure, the instruction they afford is not less valuable than where the success has been more complete.

Respecting the general arrangement of a bridge, and the number of arches to be employed, in the case of a wide river, Mr Smeaton has expressed his approbation of a few wide and flat arches, supported by good abutments, in preference to more numerous piers, which unnecessarily interrupt the water-way. In a case where a long series of small arches was required, he has made them so flat, and the piers so slight, that a single pier would be incapable of withstanding the thrust of its arch; but in order to avoid the destruction of the whole fabric in case of an accident, he has intermixed a number of stronger piers, at certain intervals, among the weaker ones. Where several arches of different heights were required, he commonly recommended different portions of the same circle for all of them; a mode which rendered the lateral thrust nearly equal throughout the fabric, and had the advantage of allowing the same centre to be employed for all, with some

little addition at the ends to adapt it to the larger arches. He records the case of Old Walton Bridge, in which the wooden superstructure had sunk two feet, so as to become part of a circle 700 feet in diameter, and the thrust, thus increased, had forced the piers considerably out of their original situation; a striking proof that the principles of the pressure of arches must not be neglected, even when frames of carpentry are concerned.

Mr Smeaton particularly describes the inconveniences arising from the old method of laying the foundations of piers, which was introduced soon after the Conquest, and which was particularly exemplified in the old London Bridge. The masonry commenced above low-water mark, being supported on piles, which would have been exposed to the destructive alternation of moisture and dryness, with the access of air, if they had not been defended by other piles, forming projections partly filled with stone, and denominated *sterlings*, which, in their turn, occasionally required the support and defence of new piles surrounding them, since they were not easily removed when they decayed; so that by degrees a great interruption was occasioned by the breadth of the piers, thus augmented, requiring, for the transmission of the water, an increase of velocity, which was not only inconvenient to the navigation, but also carried away the bed of the river under the arches, and immediately below the bridge, making deep pools or excavations, which required from time to time to be filled up with rubble stones; while the materials which had been carried away by the stream were deposited a little lower down in shoals, and very much interfered with the navigation of the river. From these circumstances, as well as from the effects of time and decay, it happened that the repairs of the old London Bridge often amounted, for many years together, to £4000 a year, while those of Westminster and Blackfriars Bridges did not cost so many hundreds. It is true, that the fall produced a trifling advantage in enabling the London water-works to employ more of the force of the tide in raising water for the use of the city; and this right, being established as a legal privilege, long delayed the improvements which might otherwise have been attempted for the benefit of the navigation of the river. The interest of the proprietors of the water-works had been valued at £125,000, and it had been estimated that £50,000 would be required for the erection of steam-engines to supply their place; while, on the other hand, from thirty to forty persons, on an average, perished annually from the dangers of the fall under the bridge. (Plate CXXXIII. fig. 6.)

But Mr Smeaton, as well as his predecessor Mr L'Abey, appears sometimes to have gone into a contrary extreme, and to have been somewhat too sparing in the use of piles. It is well known that the opening of Westminster Bridge was delayed for two years on account of the failure of a pier, the foundation of which had been partly undermined by the incautious removal of gravel from the bed of the river in its immediate neighbourhood; a circumstance which would scarcely have occurred if piles had been more freely employed in securing the foundation. The omission, however, did not arise from want of a just estimate of the importance of piles in a loose bottom, but from a confidence, founded on examination as the work advanced, that the bed of the river was already sufficiently firm. Mr Smeaton directed the foundations of Hexham Bridge to be laid, as those of Westminster Bridge had been, by means of caissons, or boxes, made watertight, and containing the bottom of the pier, completed in masonry well connected together, and ready to be deposited in its proper place by lowering the caissons, and then detaching the sides, which are raised for further use from the bottoms, which remain fixed as a part of the foundations immediately resting on the bed of the river, previous-

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ly made smooth for their reception, and sometimes also rendered more firm by piles and a grating of timber. By a careful examination of the bottom of the river at Hexham, Mr Smeaton thought he had ascertained that the stratum of gravel, of which it consisted, was extremely thin, and supported by a quicksand, much too loose to give a firm hold to piles, while he supposed the gravel strong enough to bear the weight of the pier if built in a caisson. The bridge was a handsome edifice, with elliptical arches, and stood well for a few years; but an extraordinary flood occurred, which caused the water to rise five feet higher above than below the bridge, and to flow through it with so great a velocity as to undermine the piers, and cause the bridge to divide longitudinally, and fall in against the stream; a circumstance so much the more mortifying to the eminent engineer who had constructed it, as it was the only one of his works that, "in a period of thirty years," had been known to fail. It was observed that some of the piers which had been built in coffer-dams, with the assistance of some piles, withstood the violence of the flood; and it is remarkable that the whole bridge has been rebuilt by a provincial architect with perfect success, having stood without any accident for many years.

It seems, therefore, scarcely prudent to trust any very heavy bridge to a foundation not secured by piles, unless the ground on which it stands is an absolute rock; and in this case, as well as when piles are to be driven and sawed off, it is generally necessary to have recourse to a coffer-dam. In the instance of the bridge at Harraton, for example, where the rock is nine feet below the bed of the river, Mr. Smeaton directs that the piles forming the coffer-dam be rebated into each other, driven down to the rock, and secured by internal stretchers, before the water contained within them is pumped out. In some cases a double row of piles, with clay between them, has been employed for forming a coffer-dam; but in others it has been found more convenient to drive and cut off the piles under water, by means of proper machinery, without the assistance of a coffer-dam.

Piles are employed of various lengths, from seven to sixteen feet or more, and from eight to ten inches in thickness; and they are commonly shod with iron. Smeaton directs them to be driven till it requires from twenty to forty strokes of the pile driver to sink them an inch, according to the magnitude of the weight, and the firmness required in the work. He was in the habit of frequently recommending the piles surrounding the piers to be secured by throwing in rubble stone, so as to form an inclined surface, sloping gradually from the bridge upwards and downwards. In the case of Coldstream Bridge, it was also found necessary to have a partial dam, or artificial shoal, thrown across the river a little below the bridge, in order to lessen the velocity of the water, which was cutting up the gravel from the base of the piles. But all these expedients are attended with considerable inconvenience, and it is better to avoid them in the first instance, by leaving the water-way as wide and as deep as possible, and by making the foundations as firm and extensive as the circumstances may require.

The angles of the piers, both above and under water, are commonly rounded off, in order to facilitate the passage of the stream, and to be less liable to accidental injury. Mr Smeaton recommends a cylindrical surface of 60° as a proper termination; and two such surfaces, meeting each other in an angle, will approach to the outline of the head of a ship, which is calculated to afford the least resistance to the water gliding by it.

We find that, in the year 1769, the earth employed for filling up the space between the walls of the North Bridge in Edinburgh had forced them out, so as to require the

assistance of transverse bars and buttresses for their support. In the more modern bridges, these accidents are prevented by the employment of longitudinal walls for filling up the launches, with flat stones covering the intervals between them, instead of the earth, or the more solid materials which were formerly used, and which produced a greater pressure both on the arch and on the abutments, as well as a transverse thrust against the side walls. For the inclination of the road passing over this bridge, Mr Smeaton thought a slope of one in twelve not too great; observing that horses cannot trot even when the ascent is much more gradual than this, and that if they walk, they can draw a carriage up such a road as this without difficulty; and, indeed, the bridge at Newcastle appears, for a short distance, to have been much steeper. But it has been more lately argued, on another occasion, that it is a great inconvenience in a crowded city to have to lock the wheel of a loaded waggon; that this is necessary at all times on Holborn Hill, where the slope is only one in eighteen; while in frosty weather this street is absolutely impassable for such carriages; and the descent of Ludgate Hill, which is only one in thirty-six, is considered as much more desirable, when it is possible to construct a bridge with an acclivity so gentle.

SECT. V.—*Improvements of the Port of London.*

From the study of Mr Smeaton's diversified labours, we proceed to take a cursory view of the parliamentary inquiry respecting the improvement of the port of London, which has brought forward a variety of important information, and suggested a multiplicity of ingenious designs. The principal part of that which relates to our present subject is contained in the Second and Third Reports from the Select Committee of the House of Commons, on the improvement of the Port of London; ordered to be printed 11th July 1799, and 28th July 1800.

We find in these Reports some interesting details respecting the history of the old London Bridge, which appears to have been begun, not, as Hume tells us, by William Rufus, who was killed in 1100, but in 1176, under Henry II., and to have been completed in eighty-three years. The piles were principally of elm, and remained for six centuries without material decay; although a part of the bridge fell, and was rebuilt about 100 years after it was begun. Rochester, York, and Newcastle Bridges were also built in the twelfth century, as well as the Bridge of St Esprit at Avignon. About the middle of the last century the centre pier of the old London Bridge was removed; the piles were drawn by a very powerful screw, commonly used for lifting the wheels of the water-works; and a single arch was made to occupy the place of two. In consequence of this, the fall was somewhat diminished, and it was necessary partially to obstruct the channel again, in order that the stream should have force enough for the water-works; but it was very difficult to secure the bottom from the effects of the increased velocity under the arch. Several strong beams were firmly fixed across the bed of the river, but only two of them retained their situations for any length of time; and the materials carried away had been deposited below the middle arch, so as to form a shoal, which was only sixteen inches below the surface at low water. The reports contain also much particular information respecting Blackfriars Bridge, the piles for which were driven under water, and cut off level with the bed of the foundations, by a machine of Mr Mylne's invention. The expense of Blackfriars Bridge, including the purchase of premises, was about L.260,000; that of the building only was L.170,000. Westminster Bridge, built in the beginning of the century, cost about L.400,000.

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The committee received an immense variety of plans and proposals for docks, wharfs, and bridges; and many of these were published in the Reports, together with engraved details on a very ample scale. They finally adopted three resolutions respecting the rebuilding of London Bridge.

"1. That it is the opinion of this committee that it is essential to the improvement and accommodation of the port of London, that London Bridge should be rebuilt upon such a construction as to permit a free passage, at all times of the tide, for ships of such a tonnage, at least, as the depth of the river would admit of at present between London Bridge and Blackfriars Bridge.

"2. That it is the opinion of this committee that an iron bridge, having its centre arch not less than sixty-five feet high in the clear, above high-water mark, will answer the intended purpose, and at the least expense.

"3. That it is the opinion of this committee that the most convenient situation for the new bridge will be immediately above St Saviour's Church, and upon a line from thence to the Royal Exchange."

In a subsequent Report, ordered to be printed 3d June 1801, we find a plan for a magnificent iron bridge of 600 feet span, which had been submitted to the committee by Messrs Telford and Douglas. Mr Telford's reputation in his profession as an engineer deservedly attracted the attention of the committee; but many practical difficulties having been suggested to them, they circulated a number of queries relating to the proposal, among such persons of science, and professional architects, as were the most likely to have afforded them satisfactory information. But the results of these inquiries are not a little humiliating to the admirers of abstract reasoning and of geometrical evidence; and it would be difficult to find a greater discordance in the most heterodox professions of faith, or in the most capricious variations of taste, than is exhibited in the responses of our most celebrated professors, on almost every point submitted to their consideration. It would be useless to dwell on the numerous errors with which many of the answers abound; but the questions will afford us a very convenient clue for directing our attention to such subjects of deliberation as are really likely to occur in a multiplicity of cases; and it will perhaps be possible to find such answers for all of them as will tend to remove the greater number of the difficulties which have hitherto embarrassed the subject.

QUESTIONS RESPECTING THE CONSTRUCTION OF A CAST-IRON BRIDGE, OF A SINGLE ARCH, 600 FEET IN THE SPAN, AND 65 FEET RISE. (Plate CXXXII. fig. 7.)

QUESTION I. *What parts of the bridge should be considered as wedges, which act on each other by gravity and pressure, and what parts as weight, acting by gravity only, similar to the walls and other loading, usually erected upon the arches of stone bridges? Or does the whole act as one frame of iron, which can only be destroyed by crushing its parts?*

The distribution of the resistance of a bridge may be considered as in some measure optional, since it may be transferred from one part of the structure to another, by wedging together most firmly those parts which we wish to be most materially concerned in it. But there is also a natural principle of adjustment, by which the resistance has a tendency to be thrown where it can best be supported; for the materials being always more or less compressible, a very small change of form, supposed to be equal throughout the structure, will relieve those parts most which are the most strained, and the accommodation will be still more effectual when the parts most

strained undergo the greatest change of form. Thus, if the flatter ribs, seen at the upper part of the proposed structure, supported any material part of its weight, they would undergo a considerable longitudinal compression, and being shortened a little, would naturally descend very rapidly upon the more curved, and consequently stronger parts below, which would soon relieve them from the load improperly allotted to them: the abutment would also give way a little, and be forced out by the greater pressure at its upper part, while the lower part remained almost entirely unchanged.

It is, however, highly important that the work should, in the first instance, be so arranged as best to fulfil the intended purposes, and especially that such parts should have to support the weight as are able to do it with the least expense of lateral thrust, which is the great evil to be dreaded in a work of these gigantic dimensions, the materials themselves being scarcely ever crushed when the arch is of a proper form, and the failure of an iron bridge, by the want of ultimate resistance of its parts to a compressing force, being a thing altogether out of our contemplation; and it is obvious that the greater the curvature of the resting parts, the smaller will be the lateral thrust on the abutments.

We may therefore sufficiently answer this question, by saying that the whole frame of the proposed bridge, so far as it lies in or near the longitudinal direction of the arch, may occasionally co-operate in affording a partial resistance if required; but that the principal part of the force ought to be concentrated in the lower ribs, not far remote from the intrados.

But it is by no means allowable to calculate upon a curve of equilibrium exactly coinciding with the intrados; since, if this supposition were realized, we should lose more than three fourths of the strength of our materials, and all the stability of the joints independent of cohesion, so that the slightest external force might throw the curve beyond the limits of the joint, and cause it to open. Nor can we always consider the curve of equilibrium as parallel to the intrados: taking, for example, the case of a bridge like Blackfriars, the curve of equilibrium, passing near the middle of the arch-stones, is, and ought to be, nine or ten feet above the intrados at the abutment, and only two or three feet at the crown; so that the ordinates of this curve are altogether different from the ordinates which have hitherto been considered by theoretical writers. It may be imagined that this difference is of no great importance in practice; but its amount is much greater than the difference between the theoretical curves of equilibrium, determined by calculation, and the commonest circular or elliptical arches.

With respect to the alternative of comparing the bridge with masonry or with carpentry, we may say, that the principles on which the equilibrium of bridges is calculated are altogether elementary, and independent of any figurative expressions of strains and mechanical purchase, which are employed in considering many of the arrangements of carpentry, and which may indeed, when they are accurately analysed, be resolved into forces opposed and combined in the same manner as the thrusts of a bridge. It is, therefore, wholly unnecessary, when we inquire into the strength of such a fabric, to distinguish the thrusts of masonry from the strains of carpentry, the laws which govern them being not only similar, but identical, except that a strain is commonly understood as implying an exertion of cohesive force; and we have seen that a cohesive force ought never to be called into action in a bridge, since it implies a great and unnecessary sacrifice of the strength of the materials employed. If, indeed, we wanted to cross a mere ditch, without depend-

ing on the firmness of the bank, we might easily find a beam of wood or a bar of iron strong enough to afford a passage over it, unsupported by any abutment, because, in a substance of inconsiderable length, we are sure of having more strength than we require. But to assert that an iron bridge of 600 feet span "is a lever exerting a vertical pressure only on the abutments," is to pronounce a sentence from the lofty tribunal of refined science, which the simplest workman must feel to be erroneous. But in this instance the error is not so much in the comparison with the lever, as in the inattention to the mode of fixing it; for a lever or beam of the dimensions of the proposed bridge, lying loosely on its abutments, would probably be at least a hundred times weaker than if it were firmly connected with the abutments, as a bridge is, so as to be fixed in a determinate direction. And the true reason of the utility of cast iron for building bridges consists not, as has often been supposed, in its capability of being united so as to act like a frame of carpentry, but in the great resistance which it seems to afford to any force tending to crush it.

QUESTION II. *Whether the strength of the arch is affected, and in what manner, by the proposed increase of its width towards the two extremities or abutments, when considered vertically and horizontally. And if so, what form should the bridge gradually acquire?*

The only material advantage derived from widening the bridge at the ends, consists in the firmness of the abutments; and this advantage is greatly diminished by the increase of horizontal thrust which is occasioned by the increase of breadth, while the curve of equilibrium is caused to deviate greatly from a circular or parabolic arc, in consequence of the great inequality of the load on the different parts; and there seems to be no great difficulty in forming a firm connection between a narrow bridge and a wider abutment, without this inconvenience. The lateral strength of the fabric, in resisting any horizontal force, would be amply sufficient, without the dilatation at the ends. Perhaps the form was suggested to the inventor by the recollection of the partial failure of an earlier work of the same kind, which has been found to deviate considerably from the vertical plane in which it was originally situated; but in this instance there seems, if we judge from the engravings which have been published, to have been a total deficiency of oblique braces; and the abutments appear to have been somewhat less firm than could have been desired, since one of them contains an arch and some warehouses, instead of being composed of more solid masonry. (Plate CXXXII. fig. 9.)

QUESTION III. *In what proportions should the weight be distributed from the centre to the abutments, to make the arch uniformly strong?*

This question is so comprehensive, that a complete answer to it would involve the whole theory of bridges; and it will be necessary to limit our investigations to an inquiry whether the structure, represented in the plan, is actually such as to afford a uniform strength, or whether any alterations can be made in it compatible with the general outlines of the proposal, to remedy any imperfections which may be discoverable in the arrangement of the pressure.

There is an oversight in some of the official answers to this question, from quarters of the very first respectability, which requires our particular attention. The weight of the different parts of the bridge has been supposed to differ so materially from that which is required for producing an equilibrium in a circular arch of equable curvature, that it has been thought impossible to apply the principles of the theory in any manner to an arch so constituted, at the same time that the structure is admitted

to be tolerably well calculated to stand when considered as a frame of carpentry. The truth is, that it is by no means absolutely necessary, nor often perfectly practicable, that the mean curve of equilibrium should agree precisely in its form with the curves limiting the external surfaces of the parts bearing the pressure, especially when they are sufficiently extensive to admit of considerable latitude within the limits of their substance. It may happen in many cases that the curve of equilibrium is much flatter in one part, and more convex in another, than the circle which approaches nearest to it; and yet the distance of the two curves may be inconsiderable, in comparison with the thickness of the parts capable of co-operating in the resistance. The great problem, therefore, in all such cases, is to determine the precise situation of the curve of equilibrium in the actual state of the bridge; and when this has been done, the directions of the ribs in the case of an iron bridge, and of the joints of the arch-stones in a stone bridge, may be so regulated as to afford the greatest possible security; and if this security is not deemed sufficient, the whole arrangement must be altered.

Considering the effect of the dilatation at the ends in increasing the load, we may estimate the depth of the materials causing the pressure at the abutments as about three times as great as at the crown; the plan not being sufficiently minute to afford us a more precise determination; and it will be quite accurate enough to take $w = a + bx^2$ (Prop. S.) for the load, w becoming $= 3a$ when x is 300 feet, whence $90,000 = 2a$, and $b = \frac{1}{45,000}a$; we

have then $my = \frac{1}{2}ax^2 + \frac{1}{540,000}ax^4$ for the value of the

ordinate. Now the obliquity to the horizon being inconsiderable, this ordinate will not ultimately be much less than the whole height of the arch, and its greatest value may be called sixty-four feet; consequently, when $x = 300$, we have $64 = \frac{1}{2}a \times 90,000 + \frac{1}{540,000}a \times 90,000$, and the

radius of curvature at the vertex $r = \frac{m}{a} = 937.5$ feet,

while the radius of the intrados is 725 feet, and that of a circle passing through both ends of the curve of equilibrium, as we have supposed them to be situated, 735 feet.

Hence y being $= \frac{1}{1875}x^2 \left(1 + \frac{1}{270000}x^2\right)$, we may calculate the ordinates at different points, and compare them with those of the circular curves.

Distance x .	Versed sine of the intrados.	Versed sine of the circular arc.	Ordinate y .
50.....	1.73.....	1.71.....	1.34
100.....	6.94.....	6.82.....	5.38
150.....	15.66.....	15.43.....	13.00
200.....	28.13.....	27.70.....	24.50
250.....	44.42.....	43.81.....	41.01
300.....	65.00.....	64.00.....	64.00

Hence it appears that, at the distance of 200 feet from the middle, the curve of equilibrium will rise more than three feet above its proper place, requiring a great proportion of the pressure to be transferred to the upper ribs, with a considerable loss of strength, for want of a communication approaching more nearly to the direction of the curve. If we chose to form the lower part of the structure of two series of frames, each about four feet deep, with diagonal braces, we might provide amply for such an irregularity in the distribution of the pressure; but it would be necessary to cast the diagonals as strong as the blocks, in order to avoid the inequality of tension

Bridge. from unequal cooling, which is often a cause of dangerous accidents; it would, however, be much better to have the arch somewhat elliptical in its form, if the load were of necessity such as has been supposed.

QUESTION IV. *What pressure will each part of the bridge receive, supposing it divided into any given number of equal sections, the weight of the middle section being given? And on what parts, and with what force, will the whole act upon the abutments?*

It appears, from the preceding calculations, that the weight of the "middle section" alone is not sufficient for determining the pressure in any part of the fabric; although, when the form of the curve of equilibrium has been found, its radius of curvature at the summit must give at once the length of a similar load equivalent to the lateral thrust; and by combining this thrust with the weight, or with the direction of the curve, the oblique thrust at any part of the arch may be readily found. Thus, since at the abutment $w = a + bx^2 = 3a$, and bx^2

$= 2a$, we have $y = \frac{1}{2} \frac{a}{m} x^2 + \frac{1}{12} \frac{b}{m} x^4$, and $\frac{dy}{dx}$, the tangent

of the inclination becomes $= \frac{a}{m} x + \frac{1}{3} \frac{b}{m} x^3 = \frac{ax}{m} + \frac{2ax}{3m}$

$= \frac{5x}{3r} = \frac{5}{3} \cdot \frac{300}{937.5} = \frac{8}{15} = .5333$; consequently the hori-

zontal thrust will be to the weight of the half arch as fifteen to eight, and to that of the whole arch as fifteen to sixteen. Now the arch is supposed to contain 6500 tons of cast iron, and together with the road will amount, according to Professor Robison's estimate, to 10,100 tons; so that the lateral thrust on each abutment is 9470 tons; and since this is equal to the weight of 937.5 feet in length, of the thickness of the crown, the load there must be about ten tons for each foot of the length. Hence it appears, that although the thrust thus calculated is greater than the weight of a portion of equal length with the apparent radius at the crown, it is less than would be inferred from the angular direction of the intrados at the abutment; the inclination of the termination of the arch being $24^\circ 27'$, while that of the true curve of equilibrium is $28^\circ 4'$; that is, about one tenth greater.

As a further illustration of the utility of this mode of computation, we may take the example of an arch of Blackfriars Bridge. The radius of curvature, as far as four fifths of the breadth, is here fifty-six feet; and we may suppose, without sensible error, the whole load to be that which would be determined by the continuation of the same curve throughout the breadth. Now, the middle of the arch-stones at the distance of fifty feet from the middle of the bridge, that is, immediately over the termination of the abutment, is about twelve feet above that termination, and at the crown about three feet above the intrados, so that we have only thirty-one feet for the extreme value of y , while the whole height of the arch is forty; and a being 6.58 feet, we find (Prop. U.) my

$= 13,510 = 31m$, whence $m = 436$, and $\frac{m}{a} = r = 66\frac{1}{4}$; we

also obtain the values of the ordinates of the curve as in the annexed table.

Distance x .	Ordinate y .	Middle of the Arch-Stones.
10 feet.....	.76.....	.90
20.....	3.12.....	3.72
25.....	5.13.....	6.12
30.....	7.71.....	8.75
40.....	15.81.....	16.81
50.....	31.00.....	31.00

Hence it appears that the greatest deviation is about

thirty feet from the middle, where it amounts to a little more than a foot. But if we suppose this deviation divided by a partial displacement of the curve at its extremities, as it would probably be in reality, even if the resistance were confined to the arch-stones, it would be only about half as great in all three places; and even this deviation will reduce the strength of the stones to two thirds, leaving them, however, still many times stronger than can ever be necessary. The participation of the whole fabric, in supporting a share of the oblique thrust, might make the pressure on the arch-stones somewhat less unequal, and the diminution of their strength less considerable; but it would be better that the pressure should be confined almost entirely to the arch-stones, as tending less to increase the horizontal thrust, which is here compressed by $m = 436$, implying the weight of so many square feet of the longitudinal section of the bridge: while, if we determined it from the curvature of the intrados, it would appear to be only $56a = 368$.

In this calculation, the oblique direction of the joints, as affecting the load, has not been considered; but its effect may be estimated by merely supposing the specific gravity of the materials to be somewhat increased. Thus, since the back of each arch-stone is about one eighth wider than its lower end, the weight of the materials pressing on it will be about one sixteenth greater than would press on it if it were of uniform thickness; and this increase will be very nearly proportional to w , the whole load at each part; so that it will only affect the total magnitude of the thrust, which, instead of 436, must be supposed to amount to about 463. If also great accuracy were required, it would be necessary to appreciate the different specific gravities of the various materials constituting the load, since they are not altogether homogeneous; but so minute a calculation is not necessary in order to show the general distribution of the forces concerned, and the sufficiency of the arrangement for answering all the purposes intended.

QUESTION V. *What additional weight will the bridge sustain, and what will be the effect of a given weight placed upon any of the before-mentioned sections?*

When a weight is placed on any part of a bridge, the curve of equilibrium must change its situation more or less according to the magnitude of the weight; and the tangent of its inclination must now be increased by a quantity proportional to the additional pressure to be supported, which, if the weight were placed in the middle of the arch, would always be equal to half of it; but when the weight is placed at any other part of the arch, if we find the point where the whole thrust is horizontal, the vertical pressure to be supported at each point of the curve must obviously be equal to the weight of the materials interposed between it and this new summit of the curve. Now, in order to find where the thrust is horizontal, we must divide the arch into two such portions, that their difference, acting at the end of a lever of the length of half the span, that is, of the distance from the abutment, may be equivalent to the given weight, acting on a lever equal to its distance from the other abutment, to which it is nearest: consequently this difference must be to the weight as the distance of the weight from the end to half the span; and the distance of the new summit of the curve from the middle must be such, that the weight of materials intercepted between it and the middle shall be to the weight as the distance of the weight from the end to the whole span; and the tangent of the inclination must everywhere be increased or diminished by the tangent of the angle at which the lateral thrust would support the weight of this portion of the materials, except immediately under the weight, where the two portions of the curve

will meet in a finite angle, at least if we suppose the weight to be collected in a single point.

If, for example, a weight of 100 tons, equal to that of about ten feet of the crown of the arch, be placed half-way between the abutment and the middle; then the vertex of the curve, where the thrust is horizontal, will be removed $2\frac{1}{2}$ feet towards the weight; but the radius being 937.5 feet, the tangent of the additional inclination will

be $\frac{2.5}{937.5} = \frac{1}{375}$, and each ordinate of the curve will be in-

creased $\frac{1}{375}$ of the absciss, reckoning from the place of

the weight to the remoter abutment; but between the weight and the nearest abutment the additional pressure at each point will be $10 - 2.5 = 7.5$ feet, consequently

the tangent will be $\frac{1}{125}$, and the additions to the ordi-

nates at the abutments will be $\frac{450}{375}$ and $\frac{150}{125}$, each equal

to $1\frac{1}{3}$ foot, and at the summit $\frac{150}{375} = \frac{2}{5}$, which being de-

ducted, the true addition to the height of the curve will appear to be $\frac{4}{5}$. But the actual height will remain unal-

tered, since the curve is still supposed to be terminated by the abutments, and to pass through the middle of the key-stone; and we have only to reduce all the ordinates in the proportion of 64.8 to 64. Thus, at 200 feet from

the summit, the ordinate, instead of $24.50 + \frac{200}{375} = 25.03$,

will be 24.72, so that the curve will be brought $2\frac{1}{2}$ inches nearer to the intrados, which, in the proposed fabric, would by no means diminish its strength; while, on the opposite

side, immediately under the weight, the ordinate $13 - \frac{150}{375} = 12.6$ will be reduced to 12.45, and the curve rais-

ed between six and seven inches, which is a change by no means to be neglected in considering the resistances required from each part of the structure. We ought also, if great accuracy were required, to determine the effect of such a weight in increasing the lateral thrust, which would affect in a slight degree the result of the calculation; but it would not amount, in the case proposed, to more than one eightieth of the whole thrust.

It is obvious that the tendency of any additional weight, placed near the middle of a bridge, is to straighten the two branches of the curve of equilibrium, and that, if it were supposed infinite, it would convert them into right lines; provided, therefore, that such right lines could be drawn without coming too near the intrados at the haunches, the bridge would be in no danger of giving way, unless either the materials were crushed, or the abutments were forced out. In fact, any bridge well constructed might support a load at least equal to its own weight, with less loss of strength than would arise from some such errors as have not very uncommonly been committed, even in works which have on the whole succeeded tolerably well.

QUESTION VI. *Supposing the bridge executed in the best manner, what horizontal force will it require, when applied to any particular part, to overturn it, or press it out of the vertical plane?*

If the bridge be well tied together, it may be considered as a single mass, standing on its abutments; its mean breadth being about 80 feet, and its weight 10,100 tons; and such a mass would require a lateral pressure at the crown of the arch of about 7000 tons to overset it. Any

strength of attachment to the abutments would, of course, make it still firmer, and any want of connection between the parts weaker; and since the actual resistance to such a force must depend entirely on the strength of the oblique connection between the ribs, it is not easy to define its magnitude with accuracy: but, as Professor Robison has justly remarked, the strength would be increased by causing the braces to extend across the whole breadth of the half arch. The single ribs, if wholly unconnected, might be overset by an inconsiderable force, since they stand in a kind of tottering equilibrium; and something like this appears to have happened to the bridge at Wearmouth. Dr Hutton, indeed, mentions some "diagonal iron bars" in this bridge; but these were perhaps added after its first erection, to obviate the "twisting," which had become apparent, since they are neither exhibited in the large plates of the bridge, nor mentioned in the specification of the patent.

QUESTION VII. *Supposing the span of the arch to remain the same, and to spring ten feet lower, what additional strength would it give the bridge? Or, making the strength the same, what saving may be made in the materials? Or if, instead of a circular arch, as in the plates and drawings, the bridge should be made in the form of an elliptical arch, what would be the difference in effect, as to strength, duration, convenience, and expenses?*

The question seems to suppose the weight of the materials to remain unaltered, and the parts of the structure that would be expanded to be made proportionally lighter; which could not be exactly true, though there might be a compensation in some other parts. Granting, however, the weight to be the same under both circumstances, if the ordinate y at the end be increased in the proportion of sixty-four to about seventy-three, the curvature at the vertex will be increased, and the lateral thrust diminished in the same ratio, the 9470 tons being reduced to 8300. The additional thrust occasioned by any foreign weight would also be lessened, but not the vertical displacement of the curve derived from its pressure; and since the whole fabric might safely be made somewhat lighter, the lightness would again diminish the strain. The very least resistance that can be attributed to a square inch of the section of a block of cast iron is about fifty tons, or somewhat more than 100,000 pounds. It is said, indeed, that Mr William Reynolds found, by accurate experiments, that 400 tons were required to crush a cube of a quarter of an inch of the kind of cast iron called gun-metal, which is equivalent to 6400 tons for a square inch of the section. But this result so far exceeds any thing that could be expected, either from experiment or from analogy, that it would be imprudent to place much reliance on it in practice; the strength attributed to the metal being equivalent to the pressure of a column 2,280,000 feet in height, which would compress it to about four fifths of its length, since the height of the modulus of elasticity (Prop.G.) is about 10,000,000 feet. The greatest cohesive force that has ever been observed in iron or steel does not exceed seventy tons for a square inch of the section, and the repulsive force of a homogeneous substance has not been found in any other instance to be many times greater or less than the cohesive. There cannot, however, be any doubt that the oblique thrust, which amounts to 10,730 tons, would be sufficiently resisted by a section of 215 square inches, or, if we allowed a load amounting to about one third only of the whole strength, by a section of 600 square inches; and since each foot of an iron bar an inch square weighs three pounds, and the whole length of the arch nearly a ton, the 600 square inches would require nearly as many tons to be employed in the ribs affording the resistance, upon this very low estimate

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Bridge. of the strength of cast iron. The doubts here expressed respecting Mr Reynolds's results have been fully justified by some hasty experiments, which have been obligingly made by the son of a distinguished architect: he found that two parallelepipeds of cast iron, one eighth of an inch square, and a quarter of an inch long, were crushed by a force of little more than a ton. The experiments were made in a vice, and required considerable reductions for the friction. The mode of calculation may deserve to be explained, on account of its utility on other similar occasions. Supposing the friction to be to the pressure on the screw as 1 to m , and the pressure on the screw to the actual pressure on the substance as n to 1, calling this pressure x , the pressure on the screw will be nx , and the friction $\frac{nx}{m}$; but this resistance will take from the gross

ultimate pressure f a force, which is to the friction itself as the velocity of the parts sliding on each other is to the velocity of the part producing the ultimate pressure, a proportion which we may call p to 1; and the force remaining will be the actual pressure; that is, $f - \frac{pnx}{m} = x$, and

$x = \frac{m}{m + pn} f$. In these experiments, the gross force f , as supposed to be exerted on the iron, was four tons; the friction $\frac{1}{m}$, was probably about $\frac{1}{4}$, the screw not having been lately oiled; the distance of the screw from the centre of motion was to the length of the whole vice as 3 to 4, whence n was $\frac{3}{4}$, and p was 8.44, the middle of the screw describing 4.22 inches, while the check of the vice moved through half an inch: consequently $\frac{m}{m + pn}$ was

$$\frac{4}{4 + 11.25} = \frac{1}{3.81}, \text{ and the corrected pressure becomes } 3.81.$$

In several experiments made with still greater care, and with an improved apparatus of levers, the mean force required to crush a cube of a quarter of an inch was not quite $4\frac{1}{2}$ tons, instead of 400.

Calcareous freestone supports about a ton on a square inch, which is equal to the weight of a column not quite 2000 feet in height: consequently an arch of such freestone, of 2000 feet radius, would be crushed by its own weight only, without any further load; and for an arch like that of a bridge, which has other materials to support, 200 feet is the utmost radius that it has been thought prudent to attempt; although a part of the bridge of Neuilly stands, cracked as it is, with a curvature of 250 feet radius; and there is no doubt that a firm structure, well arranged in the beginning, might safely be made much flatter than this, if there were any necessity for it.

An elliptical arch would certainly approach nearer to the form of the curve of equilibrium, which would remain little altered by the change of that of the arch; and the pressure might be more equably and advantageously transmitted through the blocks of such an arch, than in the proposed form of the structure. The duration would probably be proportional to the increased firmness of the fabric, and the greater flatness at the crown might allow a wider space for the passage of the masts of large ships on each side of the middle. There might be some additional trouble and expense in the formation of portions of an elliptical curve; but even this might be in a great measure avoided by employing portions of three circles of different radii, which would scarcely be distinguishable from the ellipsis itself.

Those who have imagined that a circular arch must in

general be "stronger than an elliptical arch of the same height and span," have not adverted to the distinction between the apparent curvature of the arch, and the situation of the true curve of equilibrium, which depends on the distribution of the weight of the different parts of the bridge, and by no means on the form of the arch-stones only; this form being totally insufficient to determine the true radius of curvature, which is immediately connected with the lateral thrust, and with the strength of the fabric.

QUESTION VIII. *Is it necessary or advisable to have a model made of the proposed bridge, or any part of it, in cast iron. If so, what are the objects to which the experiments should be directed; to the equilibration only, or to the cohesion of the several parts, or to both united, as they will occur in the intended bridge?*

Experiments on the equilibration of the arch would be easy and conclusive; on the cohesion or connection of the parts, extremely uncertain. The form and proportion of the joints could scarcely be imitated with sufficient accuracy; and since the strength of some of the parts concerned would vary as the thickness simply, and that of others as the square or cube of the thickness, it would be more difficult to argue from the strength of the model upon that of the bridge, than to calculate the whole from still more elementary experiments. Some such experiments ought, however, to be made on the force required to crush a block of the substance employed; and the form calculated to afford the proper equilibrium might be very precisely and elegantly determined, by means of the method first suggested by Dr Hooke, that of substituting for the blocks, resting on each other and on the abutments, as many similar pieces forming a chain, and suspended at the extremities. It would, however, be important to make one alteration in the common mode of performing this experiment, without which it would be of little or no value; the parts corresponding to the blocks of the arch should be formed of their proper thickness and length, and connected with each other and with the abutments by a short joint or hinge in the middle of each, allowing room for a slight degree of angular motion only; and every other part of the structure should be represented in its proper form and proportion and connection, that form being previously determined as nearly as possible by calculation; and then, if the curve underwent no material alteration by the suspension, we should be sure that the calculation was sufficiently correct; or, if otherwise, the arrangement of the materials might be altered, until the required curve should be obtained; and the investigation might be facilitated by allowing the joints or hinges connecting the block to slide a little along their surfaces, within such limits as would be allowable, without too great a reduction of the powers of resistance of the blocks.

QUESTION IX. *Of what size ought the model to be made, and what relative proportions will experiments made on the model bear to the bridge when executed?*

The size is of little importance, and it would be unsafe to calculate the strength of the bridge from any general comparison with that of the model. There is an Essay of Euler in the *New Commentaries of the Royal Academy of Petersburg* (vol. xx. p. 271), relating expressly to the mode of judging of the strength of a bridge from a model; but it contains only an elementary calculation, applicable to ropes and simple levers, and by no means comprehending all the circumstances that require to be considered in the structure of an arch.

QUESTION X. *By what means may ships be best directed in the middle stream, or prevented from driving to the side, and striking the arch? and what would be the consequence of such a stroke?*

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For the direction of ships, Professor Robison's suggestion seems the simplest and best, that they might be guided by means of a small anchor, dragged along the bottom of the river. The stroke of a ship might fracture the outer ribs if they were too weak, but could scarcely affect the whole fabric in any material degree, supposing it to be firmly secured by oblique bars, crossing from one side of the abutment to the other side of the middle; and if still greater firmness were wanted, the braces might cross still more obliquely, and be repeated from space to space.

A ship moving with a velocity of three miles in an hour, or about four feet in a second, would be stopped by a force equal to her weight when she had advanced three inches with a retarded motion; and the bridge could not very easily withstand, at any one point, a force much greater than such a shock of a large ship, if it were direct, without being dangerously strained. But we must consider that a large ship could never strike the bridge with its full force, and that the mast would be much more easily broken than the bridge. The inertia of the parts of the bridge, and of the heavy materials laid on it, would enable it to resist the stroke of a small mass with great mechanical advantage. Thus the inertia of an anvil laid on a man's chest enables him to support a blow on the anvil, which would be fatal without such an interposition, the momentum communicated to the greater weight being always less than twice the momentum of the smaller, and this small increase of momentum being attended by a much greater decrease of energy or impetus, which is expressed by the product of the mass into the square of the velocity, and which is sometimes called the ascending or penetrating force, since the height of ascent or depth of penetration is proportional to it when the resistance is given. And the same mode of reasoning is applicable to any weight falling on the bridge, or to any other cause of vibration, which is not likely to call forth in such a fabric any violent exertion of the strength of the parts, or of their connections. We must also remember, in appreciating the effect of a stroke of any kind on an arched structure, that something of strength is always lost by too great stiffness; the property of resisting velocity, which has sometimes been called resilience, being generally diminished by any increase of stiffness, if the strength, with respect to pressure, remains the same.

QUESTION XI. *The weight and lateral pressure of the bridge being given, can abutments be made in the proposed situation for London Bridge, to resist that pressure?*

Since this question relates entirely to the local circumstances of the banks of the Thames, the persons to whom it has been referred have generally appealed to the stability of St Saviour's Church, in a neighbouring situation, as a proof of the affirmative; and it does not appear that there have been any instances of a failure of piles well driven, in a moderately favourable soil. Professor Robison, indeed, asserts that the firmest piling will yield in time to a pressure continued without interruption; but a consideration of the general nature of friction and lateral adhesion, as well as the experience of ages in a multitude of structures actually erected, will not allow us to adopt the assertion as universally true. When, indeed, the earth is extremely soft, it would be advisable to unite it into one mass for a large extent, perhaps as far as 100 yards in every direction, for such a bridge as that under discussion, by beams radiating from the abutments, and resting on short piles, with cross pieces interspersed; since we might combine, in this manner, the effect of a weight of 100,000 tons, which could scarcely ever produce a lateral adhesion of less than 20,000, even if the materials were semifluid; for they would afford this resistance if they were capable of standing in the form of a bank, rising only

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one foot in five of horizontal extent, which anything short of an absolute quicksand or a bog would certainly do in perfect security. The proper direction of the joints of the masonry may be determined for the abutment exactly as for the bridge, the tangent of the inclination being always increased in proportion to the weights of the successive wedges added to the load; and the ultimate inclination of the curve is that in which the piles ought to be driven, being the direction of the result, composed of the lateral thrust, together with the joint weight of the half bridge and the abutment.

QUESTION XII. *The weight and lateral pressure of the bridge being given, can a centre or scaffolding be erected over the river, sufficient to carry the arch, without obstructing the vessels which at present navigate that part?*

There seems to be no great difficulty in the construction of such a centre. When the bridge at Wearmouth was erected, the centre was supported by piles and standards, which suffered ships to pass between them without interruption; and a similar arrangement might be made in the present case with equal facility.

QUESTION XIII. *Whether would it be most advisable to make the bridge of cast and wrought iron combined, or of cast iron only? And if of the latter, whether of the hard white metal, or of the soft gray metal, or of gun metal?*

A bridge well built ought to require no cohesive strength of ties, as Mr Southern has justly observed in his answer to the eighth question; and for repulsive resistance, in the capacity of a shore, cast iron is probably much stronger than wrought iron; and it has also the advantage of being less liable to rust, and of expanding somewhat less by heat. But wherever any transverse strain is unavoidable, wrought iron possesses some advantages, and it is generally most convenient for bolts and other fastenings. The kind of iron called gun metal is decidedly preferred by the most experienced judges, as combining in the greatest degree the properties of hardness and toughness; the white being considered as too brittle, and the gray as too soft. Dr Hutton, however, and Mr Jessop, prefer the gray; and if we allow the strength of the gun metal to be at all comparable to that which Mr Reynolds attributes to it, we must also acknowledge that a much weaker substance would be amply sufficient for every practical purpose, and might deserve to be preferred, if it were found to possess a greater degree of tenacity.

QUESTION XIV. *Of what dimensions ought the several members of the iron work to be, to give the bridge sufficient strength?*

See the answers to Questions VII. and XI.

QUESTION XV. *Can frames of cast iron be made sufficiently correct to compose an arch of the form and dimensions shown in the drawings, so as to take an equal bearing as one frame, the several parts being connected by diagonal braces, and joined by an iron cement, or other substance?*

Professor Robison considers it as indispensable that the frames of cast iron should be ground to fit each other; and a very accurate adjustment of the surface would certainly be necessary for the perfect co-operation of every part of so hard a substance. Probably, indeed, any very small interstices that might be left would in some measure be filled up by degrees, in consequence of the oxidation of the metal, but scarcely soon enough to assist in bearing the general thrust upon the first completion of the bridge. The plan of mortising the frames together is by no means to be advised, as rendering it very difficult to adapt the surfaces to each other throughout any considerable part of their extent. They might be connected either, as in the bridge at Wearmouth, by bars of wrought iron let into the slides, which might be of extremely moderate dimensions, or, as in some still more modern fabrics, by

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being wedged into the grooves of cross plates adapted to receive them, which very effectually secure the co-operation of the whole force of the blocks, and which have the advantage of employing cast iron only.

QUESTION XVI. *Instead of casting the ribs in frames of considerable length and breadth, would it be more advisable to cast each member of the ribs in separate pieces of considerable lengths, connecting them together by diagonal braces, both horizontally and vertically?*

No joint can possibly be so strong as a single sound piece of the same metal; and it is highly desirable that the curve of pressure should pass through very substantial frames or blocks, abutting fully on each other, without any reliance on lateral joints; but for the upper parts of the works, single ribs, much lighter than those which form the true arch, would be sufficiently firm.

QUESTION XVII. *Can an iron cement be made which shall become hard and durable, or can liquid iron be poured into the joints?*

Mr Reynolds has observed that a cement composed of iron borings and saline substances will become extremely hard; and it is probable that this property depends on the solidity which is produced by the gradual oxidation of the iron. It would certainly be injurious to the strength of the fabric to interpose this cement between perfectly smooth and solid surfaces, but it might be of advantage to fill up with it any small interstices unavoidably left between the parts. To pour melted iron into the joints would be utterly impracticable.

QUESTION XVIII. *Would lead be better to use in the whole or any part of the joints?*

Lead is by far too soft to be of the least use, and a saline cement would be decidedly preferable.

QUESTION XIX. *Can any improvement be made in the plan, so as to render it more substantial and durable, and less expensive? And if so, what are these improvements?*

The most necessary alterations appear to be the omission of the upper and flatter ribs; the greater strength and solidity of the lower, made either in the form of blocks or of frames with diagonals; a curvature more nearly approaching to that of the curve of equilibrium; and a greater obliquity of the cross braces.

It would be necessary to wedge the whole structure very firmly together before the removal of the centres; a precaution which is still more necessary for stone bridges, in which a certain portion of soft mortar must inevitably be employed, in order to enable the stones to bear fully on each other, and which has been very properly adopted in the best modern works. In this manner we may avoid the inconvenience pointed out by Professor Robison, who has remarked, that the compressibility of the materials, hard as they appear, would occasion a reduction of three inches in the length of the bridge, from the effect of the lateral thrust, and a consequent fall at the crown of fifteen; a result which will not be found materially erroneous if the calculation be repeated from more correct elements, derived from later experiments and comparisons. For obviating the disadvantageous effects of such a depression, which he seems to have supposed unavoidable, as well as those of a change of temperature, which must in reality occur, though to a less considerable extent, Professor Robison suggested the expedient of a joint to the middle of the bridge, with an intermediate portion, calculated to receive the rounded ends of the opposite ribs, somewhat like an interarticular cartilage; but it is impossible to devise any kind of joint without limiting the pressure, during the change of form, to a very small portion of the surfaces, which could not bear fully on each other throughout their extent if any such liberty of motion were allowed, unless all friction between them were prevented; and a

similar joint would be required at the abutment, where it would be still more objectionable, as extending to a wider surface.

The arrangement of the joints between the portions of the ribs in one or more transverse lines would be a matter of great indifference. Some have recommended to break the joints, as is usual in masonry, in order to tie the parts more firmly together; others to make all the joints continuous, as a safer method, on account of the brittleness of the materials; but if the fabric were well put together, there would be neither any want of firm connection, nor any danger of breaking from irregular strains, in whatever way the joints may be disposed.

QUESTION XX. *Upon considering the whole circumstances of the case, agreeably to the resolutions of the committee, as stated at the conclusion of their third report, is it your opinion that an arch of 600 feet in the span, as expressed in the drawings produced by Messrs Telford and Douglas, or the same plan, with any improvement you may be so good as to point out, is practicable and advisable, and capable of being made a durable edifice?*

The answers that have been returned to this question are almost universally in the affirmative, though deduced from very discordant and inconsistent views of the subject. The only reasonable doubt relates to the abutments; and with the precautions which have been already mentioned in the answer to the 11th question, there would be no insuperable difficulty in making the abutments sufficiently firm.

QUESTION XXI. *Does the estimate communicated herewith, according to your judgment, greatly exceed, or fall short of, the probable expense of executing the plan proposed? specifying the general grounds of your opinion.*

The estimate amounts to L.262,289, and it has generally been considered as below the probable expense. The abutments are set down at L.20,000, but they would very possibly require five times as much to be properly executed; while some other parts of the work, by a more judicious distribution of the forces concerned, might safely be made so much lighter, as considerably to lessen the expense of the whole fabric, without any diminution either of its beauty or of its stability.

SECT. VI.—Modern History of Bridges.

The whole series of the questions which we have been considering are still fully as interesting as they were at the time when they were circulated by the committee of the House of Commons. The practice of building iron bridges has been progressively gaining ground ever since its first introduction in 1779 by Mr Abiah Darby of Colebrook Dale. Mr Wilson, indeed, who assisted Mr Burdon in the erection of the bridge at Wearmouth, mentions in his answers an iron bridge which has stood secure for ninety years; but it must have been on a very small scale, and has not been at all generally known. Of most of the later iron bridges we find a concise account in Dr Hutton's elaborate Essay on Bridges, which has been reprinted in the first volume of his valuable collection of tracts; but there are some still greater edifices of this kind which still remain to be completed.

Mr Darby's construction is not remarkably elegant (Plate CXXXII. fig. 8), but it is by no means so objectionable as several late authors have seemed to think it. The span is 100 feet six inches, the weight 178½ tons. The curvature of the exterior concentric arches which assist in supporting the roadway, though it may be somewhat too great for the most favourable exertion of their resistance, leaves them still abundantly strong for the purpose intended: nor is it correct to say that every shore supporting a

pressure should be straight; for if its own weight bears any considerable proportion to that which it has to support, the curvature ought to be the same with that of a chain of the same weight suspending a similar load in an inverted position; and the parts of the bridge in question seem to differ only about as much from such a form in excess of curvature as a straight line would differ from it in defect. The partial failure which accidentally occurred rather bears testimony to the merits than to the demerits of the bridge, as they would be estimated in any other situation; for the lateral thrust, which it is generally desirable to reduce as much as possible, was here actually too small; and the abutments were forced inwards by the external pressure of the loose materials forming the high banks against which the abutments rested.

Mr Paine's iron bridge, exhibited in London, and intended to have been erected in America, was a professed imitation of a catenarian curve; it was a good specimen of that ideal something which a popular reformer generally has in view; a thing not ill imagined, and which might possibly succeed very well under very different circumstances, but which, when closely examined, proves to be wholly unfit for the immediate purpose to which the inventor intends to apply it.

The bridge at Wearmouth was completed in 1796, in a great measure through the exertions of Mr Burdon, both as architect and as principal proprietor of the undertaking. It is remarkable for springing seventy feet above low-water mark; and the arch rises thirty feet, leaving a height of 100 feet in the whole for the passage of ships in the middle of the stream; the span is 240. The abutments are founded on a solid rock, but their own internal solidity appears to be somewhat deficient. The weight of iron is 250 tons, 210 of them being of cast iron, and 40 of wrought iron. (Plate CXXXII. fig. 9.)

A bridge was finished in the same year at Buildwas, near Colebrook Dale (Plate CXXXII. fig. 10), under the direction of Mr Telford, 130 feet in span, weighing 174 tons, and rising only seventeen feet in the roadway, but furnished on each side with a stronger arch, of about twice the depth, which extends to the top of the railing, and assists in suspending the part of the road which is below it by means of king-posts, and in supporting the part nearer the abutments by braces and shores. The breadth is only eighteen feet; and the construction would not be so easily applicable to a wider bridge, unless the road were divided in the middle by an additional elevated arch with its king-posts, like the celebrated wooden bridge at Schaffhausen, which was burnt down by one of the French armies. A third iron bridge was also erected in 1796, on the Parrot at Bridgewater, by the Colebrook Dale Company. It consists of an elliptic arch of seventy-five feet span and twenty-three feet height, and somewhat resembles the bridge at Wearmouth in the mode of filling the haunches with circular rings; a mode not very advantageous for obtaining the greatest possible resistance from the materials, and consequently throwing a little too much weight on the parts of the arch which support them, although it is probable that no great inconvenience has actually arisen from this cause.

An attempt was also made about the same time to throw an iron bridge over the river Tame in Herefordshire, but it fell to pieces as soon as the centre was removed. A similar failure occurred some time afterwards in a bridge of about 180 feet span, which was erected on the Tees at Yarm. In 1802 or 1803 an elegant iron bridge of 181 feet span and sixteen and a half of rise was erected at Staines. Its general form resembled that of the bridge at Wearmouth, but the mode of connection of the parts was somewhat different. In a short time after its completion,

it began to sink, and some of the transverse pieces broke in consequence of the change of form. Upon examination it was found that one of the abutments had given way; and when this was repaired and made firmer, the other failed. The abutment was pushed outwards horizontally without any material derangement of its form or direction; a circumstance which could not have happened if its weight had been sufficiently great. But the architect seems to have trusted to the firmness of the iron and the excellence of the workmanship, and to have neglected the calculation of the lateral thrust, which it is of so much importance to determine.

Mr Rennie executed several iron bridges with success in Lincolnshire; one at Boston over the Witham, of which the span is eighty-six feet, and the rise five and a half only; but the abutments being well constructed, it has stood securely, notwithstanding the fracture of some of the cross pieces of the frames, which had been weakened by the unequal contraction of the metal in cooling. At Bristol, Messrs Jessop erected two iron bridges of 100 feet span, rising fifteen; each of them contains 150 tons of gray iron, and the expense of each was about L.4000. The construction appears to be simple and judicious. (Plate CXXXII. fig. 11.)

Mr Telford has been employed in the construction of several aqueduct bridges on a considerable scale. One of these was cast by Messrs Reynolds, and completed in 1796, near Wellington in Shropshire; it is 180 feet long, and twenty feet above the water of the river, being supported on iron pillars. Another, still larger, was cast by Mr Hazledine, for carrying the Ellesmere Canal over the river Dee, at Pontcysyllte, in the neighbourhood of Llangollen. It is supported 126 feet above the surface of the river by twenty stone pillars, and is 1020 feet in length, and twelve feet wide. (See AQUEDUCT, Plate XLIX.)

In France, a light iron bridge for foot passengers only was thrown across the Seine, opposite to the gate of the Louvre, in 1803. It is supported by stone piers, which are too narrow to withstand the effect of an accident happening to any part of the fabric, and leaving the lateral thrust uncompensated; nor is there any immediate reason to apprehend that inconvenience should arise from this deficiency of strength, since it is highly improbable that any partial failure should occur in such a situation, supposing the bridge originally well constructed. (Plate CXXXIII. fig. 1.)

But all these works have been far exceeded in extent and importance by the bridges which have been built over the river Thames. The Vauxhall Bridge was completed and opened in August 1816; it consists of nine arches of cast iron, each of seventy-eight feet span, and between eleven and twelve feet rise. The breadth of the roadway is thirty-six feet clear. The architect was Mr Walker. The form of the arches considerably resembles that of Messrs Jessop's bridges at Bristol, but it is somewhat lighter and more elegant, and it has the advantage of a greater solidity in the blocks supporting the principal part of the pressure. (Plate CXXXIII. fig. 3.)

This advantage also characterizes very strongly the masterly design of Mr Rennie shown in the structure at the bottom of Queen Street, Cheapside, opposite to Guildhall, under the name of the Southwark Bridge. It exhibits an excellent specimen of firmness of mutual abutment in the parts constituting the chief strength of the arch, which has been shown in this essay to be so essential to the security of the work, and which the architect had probably been in a great measure induced to adopt from his practical experience of the comparative merits of different arrangements. (Plate CXXXIII. fig. 4, 5.)

An act of parliament for the erection of this bridge was

Bridge.

Bridge.

passed in 1811, but it was not begun till 1814, the act having directed that no operations should be commenced until L.300,000 out of the required L.400,000 should be raised by subscription.¹ The subscribers were allowed to receive ten per cent. annually on their shares, and the remainder of the receipts was to accumulate until it should become sufficient to pay off to the proprietors the double amount of their subscriptions: after this time the bridge was to remain open without any toll. The middle arch is 240 feet in span, the side arches 210 feet each. The abutment is of firm masonry, connected by dowels to prevent its sliding, and resting on gratings of timber supported by oblique piles. The piers stand on foundations nine or ten feet below the present bed of the river, in order to provide against any alterations which may hereafter take place in its channel from the operation of various causes; and they are abundantly secured by a flooring of timber resting on a great number of piles.

Weight of half of the middle arch of Southwark Bridge.

No.	8 Blocks.	3 Oblique Stays.	Cross Frames.	Crosses.	Spandrels.	Total.
	t. cwt.	t. cwt.	t. cwt.	t. cwt.	t. cwt.	t. cwt.
1	62 18	2 11	11 0	9 1	26 4	111 17
2	60 19	2 12	10 13	8 15	20 3	103 4
3	54 15	2 13	10 2	8 2	32 16	108 10
4	51 3	2 11	9 17		23 14	87 6
5	50 17	2 13	9 15		32 14	95 19
6	51 2	2 13	9 15		24 15	88 6
half 7	25 12	2 12			20 7	48 12
Covering-plates.....						152 0
Cornice and palisades.....						77 5
Roadway and pavement.....						650 0

Whole weight..... 1,523 0
 Springing plate..... 13 10
 Abutment..... 11,000 0
 Span 240 feet; rise 24; depth of the blocks or plates at the crown six feet, at the pier eight feet.

It is evident from the inspection of this statement of the weights, that their distribution is by no means capable of being accurately expressed by any one formula; but it will be amply sufficient for the determination of the thrust to employ the approximation founded on the supposition of a parabolic curve (Prop. T.); and if we afterwards wished to find the effect of any local deviation from the assumed law of the weight, we might have recourse to the mode of calculation exemplified in the answer to the fifth question. But, in fact, that answer may of itself be considered as sufficient to show, that the effect of a variation of a few tons from the load appropriate to each part would be wholly unimportant.

We must, therefore, begin by finding the weight of a portion of the arch corresponding to a quarter of the span;

and the whole angle, of which the tangent is $\frac{24}{120} = .2$,

being $11^\circ 18\frac{1}{2}'$, its sine is .1961; and the angle, of which the sine is .09805, being $5^\circ 37\frac{1}{2}'$, we have to compute the weight of $\frac{337.5}{678.5}$, or $\frac{1}{2.01}$ of the angular extent, beginning

from the middle of the arch; and this will be $48 \frac{1}{20} + 88 \frac{6}{20} + 95 \frac{12}{20} + (87 \frac{6}{20}) \times .7345 = 297$ tons. Now the weight of the covering-plates, cornice, palisades, roadway, and pavement, is distributed throughout the length, without sensible inequality, making 879 tons, from which the part immediately above the piers might be deducted;

but it will be safer to retain the whole weight, especially as something must be allowed for the greater extent of the upper surface of the wedges. We shall therefore have for the interior quarter $297 + 439.5 = 736.5$ tons, and for the exterior $1523 - 736.5 = 786.5$, the difference being fifty tons; one sixth of which added to 736.5, gives us 744.8 for the reduced weight, which is to the lateral thrust as the rise to the half span. But for the rise we must take twenty-three feet, since the middle of the blocks next to the piers is a foot more remote from the intrados than that of the blocks at the crown; and the true half span, measured from the same point, will be 4

$\times \frac{120}{312}$ greater than that of the intrados, amounting to 121.6. We have therefore $23 : 121.6 = 745.8 : 3942$ tons, for m , the lateral thrust; and for $\frac{1}{2} ax$, $736.5 - \frac{50}{6}$

$= 728.2$; whence, $\frac{1}{2} x$ being 60.8, $a = 11.98$, and r

$= \frac{m}{a} = 329$ feet, the radius of curvature of the curve of

equilibrium at the vertex, while that of the middle of the blocks is 334. In order to determine the ordinate y , we

have $my = \frac{1}{2} ax^2 + \frac{1}{12} bx^4$; but $\frac{1}{2} ax$ for the whole arch is

728.2 , and $\frac{1}{4} bx^3 = 50$; consequently $my = 728.2x + \frac{50}{3} x$,

the first portion varying as x^2 , and the second as x^4 ; and

the sum y being $23 = 22.49 + .51$, the ordinate at $\frac{1}{4} x$ or

30.4 feet is $\frac{1}{16} \times 22.49 + \frac{1}{256} \times .51 = 1.41$; and, in a

similar manner, any other ordinate may be calculated, so that we have

x .	y .	Middle of the Blocks.
30.2	1.41	1.40
60.8	5.65	5.67
91.0	13.02	12.89
121.6	23.00	23.00

Hence it appears that the curve of equilibrium nowhere deviates more than about two inches from the middle of the blocks, which is less than one fortieth of the whole depth.

The half weight of the smaller arches is probably about 1300 tons, and their lateral thrust 3500; and, since the abutment weighs 11,000 tons, the foundation ought to

have an obliquity of $\frac{3500}{12300}$, or more than one in four, if it

were intended to stand on the piles without friction; but in reality it rises only sixty-six inches in 624, or nearly one in nine; so that there is an angular difference of one in seven between the direction of the piles and that of the thrust, which is probably a deviation of no practical importance.

It remains to be inquired how far the series of masses of solid iron, constituting the most essential part of the arch, is well calculated to withstand the utmost changes of temperature that can possibly occur to it in the severest seasons (Prop. K.) For this purpose, we may take

the mean depth $a = 7$ feet, h being 23; then $1 + \frac{4h}{a}$

$= \frac{99}{7} = 14.14$, and $1 + \frac{16hh}{15aa} = \frac{9199}{735} = 12.52$: consequent-

¹ The Southwark Bridge was not completed at the time this article was written.

ly the greatest actual compression or extension of such a structure is to the mean change which takes place in the direction of the chord, as 14.14 to 12.52, or as 1.129 to one; and if, in a long and severe frost, the temperature varied from 52° to 20°, since the general dimensions would con-

tract about $\frac{1}{5000}$, the extreme parts of the blocks near the

abutments would vary $\frac{1.129}{5000}$ of their length; and the mo-

dulus M being about 10,000,000 feet, this change would produce a resistance equivalent to the weight of a column of the same substance 2258 feet high; that is, to about three tons for each square inch, diminishing gradually towards the middle of the blocks, and converted on the other side into an opposite resistance; so that this force would be added to the general pressure below in case of contraction, and above in case of extension. Now, the lateral thrust is derived from a pressure equivalent to a column about 329 feet high, of materials weighing 1523 tons, while the blocks themselves weigh 357; that is, to a column equal in section to the blocks, and 1400 feet high; it will therefore amount to about two tons on each square inch; consequently such a change of temperature as has been supposed, will cause the extreme parts of the abutments to bear a pressure of five tons, where, in the ordinary circumstances, they have only to support two.

The ingenious architect proposed to diminish this contingent inconvenience, by causing the blocks to bear somewhat more strongly on the abutments at the middle than at the sides, so as to allow some little latitude of elevation and depression in the nature of a joint; and, no doubt, this expedient would prevent the great inequality of pressure which might otherwise arise from the alternations of heat and cold. But it cannot be denied that there must be some waste of strength in such an arrangement, the extreme parts of the abutments, and of the blocks near them, contributing very little to the general resistance; and when we consider the very accurate adjustment of the equilibrium throughout the whole structure, we shall be convinced that there was no necessity for any thing like so great a depth of the solid blocks, especially near the abutments; and that the security would have been amply sufficient if, with the same weight of metal, they had been made wider in a transverse direction, preserving only the form of the exterior ones on each side, if it had been thought more agreeable to the eye. In carpentry, where there is often a transverse strain, and where stiffness is frequently required, we generally gain immensely by throwing much of the substance of our beams into the depth; but in a bridge perfectly well balanced, there is no advantage whatever from depth of the blocks. We only want enough to secure us against accidental errors of construction, and against partial loads from extraneous weights; and it is not probable that either of these causes, in such a bridge, would ever bring the curve of equilibrium six inches, or even three, from its natural situation near the middle of the blocks.

We cannot conclude our inquiries into this subject with a more striking example than by applying the principles of the theory to the magnificent edifice by the same judicious and experienced architect, which now bears the triumphant appellation of Waterloo Bridge; a work not less pre-eminent among the bridges of all ages and countries, than the event which it will commemorate is unrivalled in the annals of ancient or modern history. It consists of nine elliptical arches, each of 120 feet span, and thirty-five feet rise. The piers are twenty feet thick, the road twenty-eight feet wide, besides a foot pavement of seven feet on each side. The arches and piers are built of large

blocks of granite, with short counter-arches over each pier. The haunches are filled up, as is usual in the most modern bridges, by spandrels, or longitudinal walls of brick, covered with flat stones, and extending over about half the span of the arch; the remainder being merely covered with earth or gravel, which is also continued over the stones covering the spandrels. The hollow spaces between the walls are carefully closed above, and provided with outlets below, in order to secure them from becoming receptacles of water, which would be injurious to the durability of the structure. The mean specific gravity of the materials is such, that a cubic yard of the granite weighs exactly two tons, of the brick work one ton, and of the earth a ton and an eighth. Hence the weight of the whole may be obtained from the annexed statement. (Plate CXXXIV. fig. 1, 2, 3.)

Contents of the materials in half an arch of Waterloo Bridge, from the middle of the pier to the crown, beginning from the springing of the arch.

	Cubic Feet.
Half of the arch stones.....	25311
Half of the inverted arch.....	2555
Square spandrel between them.....	1994
Outside spandrel walls.....	4374
Spandrels of brick.....	4976 (= 2489)
Kirbels of the brick spandrels.....	1271
Flat stone covers.....	969
Earth.....	10260 (= 5771)
Foot pavement.....	620
Frieses, E. and W.....	1586
Cornice, E. and W.....	1120
Plinth of balustrade.....	510
Solid in parapet.....	416
Balusters 72, 151 cwt.....	102
Coping, E. and W.....	142

From this statement, and from a consideration of the arrangement of the materials, exhibited in the plate, we may infer that the half arch, terminated where the middle line of the arch-stones enters the pier, is equivalent in weight to about 34,000 cubic feet of granite; its inner half containing in round numbers 13,000, and its outer 21,000, whence we have 14,333 for the reduced weight of the quarter arch (Prop. T.) The extreme ordinate will be about twenty-one feet; the middle of the blocks being somewhat more than sixteen feet above the springing of the arch, and the key-stone being four feet six inches deep; consequently the horizontal thrust will be expressed by $14,333 \times \frac{60}{21} = 40,952$ cubic feet, weighing 3033

tons. But $\frac{1}{2}ax$ being 11667, and $\frac{1}{2}x = 30$, $a = 389$, and

$\frac{m}{a} = r = \frac{40952}{388} = 105$ feet; while the radius of curva-

ture of the ellipse at the crown is $\frac{60 \times 60}{35} = 103$ feet.

It is obvious, therefore, that the curve of equilibrium will pass everywhere extremely near to the middle of the blocks, and there can be no apprehension of any deficiency in the equilibrium. It is true that, as it approaches to the piers, it acquires an obliquity of a few degrees to the joints; but the disposition to slide would be abundantly obviated by the friction alone, even if the joints were not secured by other precautions.

In building the arches the stones were rammed together with very considerable force, so that, upon the removal of the centres, none of the arches sunk more than an inch and a half. In short, the accuracy of the whole

Bridge. execution seems to have vied with the beauty of the design, and with the skill of the arrangement, to render the Bridge of Waterloo a monument, of which the metropolis of the British empire will have abundant reason to be proud for a long series of successive ages. (L. L.)

ADDITIONS.¹

The old London Bridge, which for more than 600 years had been exposed to the corrosive power of the atmosphere in the upper part of its structure, and the continual action of a rapid current in the lower, had for several years been reckoned insecure. Accidents, attended with loss of life and the destruction of property, were frequent, in consequence of the great velocity with which barges and smaller craft were carried by the stream through its arches, and of their descent, by means of a considerable fall, from one level to another. At length, in 1823, an act of parliament was obtained for rebuilding the bridge and improving and making suitable approaches to it. The act directed that the new bridge should be erected according to a plan of the late John Rennie, justly celebrated for his consummate skill in his profession. He, however, having died before any thing had been done to carry his views into effect, the execution was intrusted to his son, now Sir John Rennie, and the building contracted for by Messrs Jolliffe and Banks.

The new bridge, consisting of five elliptical arches, was originally intended to be on the site of the old one, and its elevation was to correspond with the level of the ancient approaches. The corporation of London, however, changed this part of the plan, and determined that it should be built 180 feet farther up the river, by which the steep ascent of Fish Street Hill would be avoided; but this advantage was counterbalanced by a heavy expense for the approaches. The whole expense of the bridge, with its approaches, may cost about L.2,000,000; and of this sum L.200,000 was to be contributed by the government.

The building was begun by driving the first pile of a coffer-dam for the south pier on the 15th of March 1824. The bed of the river at the site of the bridge is about thirty feet deep at low water of spring-tides, and the current being at all times extremely rapid, the coffer-dams in which the piers were to be built, required to be constructed with more than ordinary strength to keep out the water. Their general form was elliptical; three rows of piles dressed in the joints, and shod with iron, many of them eighty or ninety feet long, were driven into the ground, and, after being firmly bolted together, were puddled with clay; wooden stays or props were then introduced between the different rows of piers, and the whole interior space strongly truss-framed in a diagonal manner, and the longitudinal beams firmly strapped together, forming at the joints abutments for the braces. Stairs were also formed for descending into the coffer-dam, and pumps fixed to raise the water arising from springs or leakage. The first coffer-dam was completed on the 27th of April 1825, and the first stone of the bridge was laid on the 15th of June, with all due ceremony. The foundations of the piers are of wood. Piles of beech were first driven in the interior of the coffer-dam to a depth of nearly twenty feet into the stiff blue clay which forms the natural bed of the river; two rows of horizontal sleepers, about twelve inches square, were then laid on the head of these piles, and covered with beech planking six inches thick, and on this floor the lowermost course of masonry was laid.

The obstruction which the navigation of the river suf-

fered by the works of the new bridge made it expedient to throw two of the small arches of the old bridge at each end into one. This was effected with great skill, and in the short space of about six weeks.

The flatness of an elliptical arch produces a greater load on the centring which supports the arch while building, than in the erection of semicircular arches; and for this reason the new bridge required centres of more than ordinary strength. The principle of construction adopted was that of the diagonal truss. Each centre was composed of ten frames or ribs, which were supported at the two ends on piles driven into the bed of the river. On the top, these frames were boarded over with stout planks placed within two or three inches of each other. The arches being unequally wide, four sets of centres were used; and although each consisted of nearly 800 tons of timber, it was erected in about ten days. The first arch was keyed in on the 4th of August 1827; and so much progress had been made in the other arches, that the last was keyed in on the 10th November 1828. Conformably to the improved modern practice of building bridges, instead of filling up the spandrels of the arches with loose rubble-work, longitudinal or hance-walls, as they are called, have been built over the arches. On the top of these large blocks of stone are bedded, and surmounted by heavy stone landings, on which is laid a course of tarras or cement, and above that the roadway. The approach from the city side is brought to the level of the bridge, or nearly so, by a series of land arches in continuation of the bridge, and more particularly by one over Tooley Street on the Surrey side, and another over Thames Street on the city side. This arch is a very flat ellipse; it extends over both the roadway and foot paths. The centre on which it was turned was almost entirely supported on struts and uprights, placed so as to range with the lines of the foot paths; and thus a free space was left for carriages and foot passengers while the arch was building.

The only deviation in the principal part of the bridge from the original plan consisted in an addition of six feet to the width of the roadway, and of two feet to the height of the abutment arches. The first of these was considered to be of such importance, that the expense, L.42,000, was defrayed out of the public purse.

The bridge was completed on the last day of July 1831, the whole time occupied in its erection having been seven years, five months, and seventeen days.

The bridge, as has been already stated, consists of five elliptical arches, the least of which is larger than any stone arch of this description ever before erected. The centre arch is 152 feet span, with a rise of twenty-nine feet six inches above high-water mark. The two arches next the centre are 140 feet span, with twenty-seven feet six inches of rise; and the two abutment arches are 130 feet span, rising twenty-four feet six inches. The piers are of a rectangular form, and perfectly solid. The great diminution in the quantity of masonry by the semielliptical form of the arch has admitted of the piers being reduced in thickness below the ordinary proportions. The bases of the piers are of a circular cone-topped form; they harmonize with the waving line of the water, and prevent the impression of tameness which might have resulted from the plainness and rectangular shape of the shafts. A simple modillion cornice, supported on dentils formed of solid beams of granite, runs along the upper part of the bridge, and marks externally the line of roadway. This is surmounted by a close parapet, in perfect keeping with

¹ The foregoing article was written by the late Dr Thomas Young, for the *Supplement* to the Fourth, Fifth, and Sixth Editions of this Encyclopædia.

the simplicity of the whole structure. The line of roadway, or upper surface of the bridge, is a segment of a very large circle, the rise being only one in 132. The abutments are each seventy-three feet wide at the base, and they spread out backward, so as to sustain the thrust of the bridge with the best effect.

The length of the bridge from the extremities of the abutments is 982 feet, and within the abutments 728 feet; the roadway is fifty-three feet between the parapets, being eight feet wider than the old bridge, and eleven feet wider than any other bridge on the Thames. Of this width, the footways occupy nine feet each, and the carriageway thirty-five feet. The whole bridge, including the dry arches over Thames and Tooley Streets, is constructed of the finest granite, selected from the quarries of Aberdeen, Heytor, and Penryn. The remaining arches over which the approaches pass are of brick. The total quantity of stone employed was about 120,000 tons. Magnificent candelabra of brass support the gas lamps, and the ends of the parapet are finished with four immense blocks of granite. The building expense of the bridge amounts at present to £506,000; the remainder of the whole expense has been incurred by the approaches. A side view of the bridge is exhibited in Plate CXXXIII. fig. 7, and a plan of the roadway in fig. 8.

A few years ago the elliptical arches of Blackfriars and Waterloo Bridges were considered as the largest ever erected; but the centre arch of the one is less by one half, and that of the other by one fourth, than the centre arch of the new London Bridge. Plate CXXXIII. fig. 2, will give a distinct notion of their relative magnitudes, in which AA represents the curve of the Blackfriars arch, BB that of the Waterloo, and CC that of the new London Bridge, stretching out far above and beyond the others.

Dunkeld Bridge, which crosses the Tay, was completed in the year 1809, after a design of Mr Telford; and, by competent judges, is regarded as one of his happiest efforts. It consists of five large and two small arches. The figure of the arch is a segment of a circle. This is the form which Mr Telford seems to have adopted for all his bridges. Some may be of opinion that it is less elegant than the semi-ellipse; but looking at Dunkeld Bridge, we hesitate to pronounce an absolute opinion.

The principal dimensions of the bridge are these:—

	Feet.	In.
Span of the middle arch.....	90	0
Span of the two adjoining arches.....	84	0
Span of the two side arches.....	74	0
Span of the land arches.....	20	0
Rise of the middle arch.....	30	0
Breadth across the soffit.....	27	0
Breadth of roadway within the parapets.....	25	0
Breadth of footpath on each side.....	3	6
Thickness of each of the two middle piers.....	16	0
Thickness of each of the two adjoining piers.....	14	0
Thickness of each of the two side piers.....	20	0
Thickness of the land abutment.....	7	0

The Dean Bridge, Edinburgh, is remarkable on account of its situation, its magnitude, the style of its elevation, the peculiarities of the details of its construction, and the practical advantages of those peculiarities as proved by the complete success which has attended the execution of the design.

This edifice is situated at the north-west extremity of the city of Edinburgh, and crosses the deep ravine formed by the stream called the Water of Leith, a little above St Bernard's Well. This ravine had previously been found an effectual barrier to the extension of the New Town in the north-western direction, and presented an obstacle to the

improvement of the high northern or Queensferry Road, which could only be surmounted by a spacious bridge.

The length of the Dean Bridge is 447 feet, and the width between the parapets thirty-nine feet, consisting of a carriageway twenty-three feet wide between the curb-stones, and two footpaths, each eight feet wide. The height of the roadway above the bed of the river is 106 feet.

The style of the elevation is unprecedented, and demands our particular attention.

A lofty bridge forming a commodious roadway across a deep ravine, will, from the nature of its romantic situation, and its evident utility, excite our admiration, notwithstanding that, when examined as a work of art, solely upon its own merits, and when our minds are divested of the fulness of gratification derived from the surrounding scenery, we frequently find its architectural details and outline devoid of taste, and deservedly the object of our disapprobation.

Upon examining, strictly upon their own merits as architectural productions, even the grandest viaducts and aqueducts hitherto constructed of masonry only, it will, we venture to say, be generally felt, either that the pillars have a heavy and clumsy appearance, or that the great mass of masonry being uppermost, the superstructure appears too massive, on account of the unusual altitude at which it is supported; and we are of opinion that the expansive mass of dead flat masonry presented by the spandrels over the pillars, and between the adjacent arches, is the principal cause of the anomaly, especially when semi-circular arches, on many accounts to be preferred in such situations, are adopted.

This observation is in some measure applicable to all descriptions of stone bridges. To large bridges over rivers, of which the springers, and consequently the mass of the spandrels, do not require to be elevated far above the surface of the water, the objection has less weight; but even in this case the difficulty has been generally felt, as is proved by the incessant endeavours of engineers to form new designs for carrying up the masonry over the piers, so as to give relief to the face of the spandrel walls. The ordinary devices for this purpose, if applied to a lofty bridge or viaduct, would be attended with many practical objections, and would fail of producing the desired effect.

It therefore remained a desideratum to devise a method by which the masonry composing the body of a bridge, to be supported upon lofty pillars, may have its exterior elevation or outline relieved, so as to break the flatness of the spandrel walls, thereby giving lightness and elegance to the superstructure; and it was essential to the perfect fulfilment of this object to produce the desired effect by some bold stroke of extension upon the general plan, not by the aid of minor superficial ornaments, now generally discarded, particularly from bridges whose magnitude alone insures grandeur, and purity of design the most effective beauty.

With the aid of Plate CXXXV. the following description will convey an accurate idea of the design of the Dean Bridge, which may be regarded as consisting of these parts, viz. the main body of the bridge supporting the carriageway, and the wing-arches on each side supporting the footpaths.

The main body of the bridge consists of four arches, segments of circles, each ninety feet span and thirty feet rise; consequently the radius of curvature of the arch is forty-eight feet nine inches. The width across the soffit is thirty-one feet. These main arches are supported upon hollow pillars, hereafter more particularly described, eleven feet thick and thirty-one feet wide, agreeably to the soffit of the arch. The arch springers are set at the

Dunkeld
Bridge.

The Dean
Bridge,
Edinburgh.

Bridge.

height of sixty-seven feet above the level of the bed of the stream flowing underneath the second arch from the south. The depth of the arch-stones of these main arches is three feet, being one thirtieth of the span. Over the pillars, and between the adjacent arches, the spandrels are built up solid to the height of twelve feet above the arch springers. The remainder of the spandrels is left hollow, with the exception of the longitudinal spandrel walls, four feet apart, and one foot six inches thick, which being corbelled at the top, and covered with flag pavement stones, support the bridge roadway. The exterior spandrel walls are two feet six inches thick, faced with close-jointed ashlar.

The wing-arches supporting the footpaths constitute the peculiar characteristic of the Dean Bridge, springing from pilasters brought up from the foundation, and executed at the same time with the main pillars, five feet wide in front, and projecting six feet from the body of the pillars. These pilasters are continued up the face of the spandrels of the main arches to the height of seventeen feet four inches above the level of the lower arch springers, at which height the springers for the upper arches are laid. The upper or wing-arches extend over the main arches. There are therefore four on each side of the bridge, each ninety-six feet span, and sixteen feet eight inches rise; consequently the radius of curvature is seventy-seven feet five inches; the width across the soffit is eight feet two inches, of which five feet project in front of the face of the spandrels of the lower arches, the remainder, three feet two inches, being bonded into the main body of the bridge. The depth of the arch-stones is two feet six inches, or about one thirty-eighth part of the span. The face of the outer spandrels of the upper arches is one foot within the face of the main pilasters, allowing an intake of six inches upon the face of the upper arch springers, and the remaining six inches for the projection of a pilaster up the spandrels, in order to relieve, as far as practicable, the flatness of this part of the work.

The upper arches, by a bold projection of five feet, effectually break up and relieve the extensive surface of dead masonry that would otherwise be presented by the spandrels of the ninety feet arches, which being elevated upon lofty pillars, would, when viewed from the walks by St Bernard's Well, along the banks of the rivulet, present a mass of flatness and uniformity detractive from the general gratification which the height and magnitude of the edifice, and the beauty of the surrounding scenery, would nevertheless insensibly create.

The upper arches of the Dean Bridge forming in a measure a secondary member of the edifice, their spandrels may with propriety be further relieved with ornamental sculpture, which, though generally excluded from modern bridges, would in this case be rendered appropriate by the circumstance of the close vicinity of the bridge to the most splendid buildings of the New Town of Edinburgh. However, the general purity of the design renders it doubtful whether or not such embellishment would be conducive to the perfection of the work, and may be regarded as doubtful.

The cornice consists of a frieze course and cordon, together two feet six inches in height. The parapet consists of a base, dado, and coping, together four feet in height above the footpath pavement. The profile of the cornice and parapet will be best understood by reference to Plate CXXXV. It will be observed that the members are very few, bold, and easily executed; the effect thus produced upon the elevation is particularly striking; and smaller members at such an elevation would fail of producing any effect.

We shall now consider the peculiarities and practical advantages of the details of the construction of the Dean Bridge.

The pillars which support the main arches or body of the bridge are eleven feet thick, but not of solid masonry, there being four voids in the shaft of each pillar, of which the dimensions and construction will be clearly understood from Plate CXXXV. fig. 1 and 2. The side walls are three feet thick, and the interior cross walls which connect them two feet, all of squared ashlar, laid in uniform courses throughout; the interior stones being of the same height as the face stones, and as fully and truly squared upon the bed. In these three-foot walls every alternate course consists entirely of headers, three feet on the bed, and the intermediate courses are of stretchers laid in pairs, each about one foot five and a half inches on the bed, the space of about one inch being left for the longitudinal joint, to allow room for forcing down stiff mortar with a wooden sword, it being found that this method of grouting the vertical joint with stiff mortar makes more solid work than would be effected by laying the stones nearly close, and pouring in thin grout, which gradually dries up and leaves the joint void.

Many practical advantages attend the construction of hollow pillars. That part only of the masonry is omitted which, if the pillar were solid, would tend in the least degree to its effective stability, and, consequently, being almost a useless mass, would do more harm than good, by operating as a pernicious load upon the foundations. Also, by this method, the bed of every stone throughout the work is exposed to view, which insures perfect workmanship in the setting, on which the strength of masonry mainly depends. Moreover, the great proportion of materials, labour, and workmanship thus saved is an important consideration.

In the dressing of ashlar required to carry a heavy load, as that for the pillars of a bridge, especial pains must be taken that the stones be as full at the back as at the front; for it is here of importance to observe that workmen, especially piece-workmen, find it much to their advantage to infringe upon this fundamental rule in good masonry. By working the stone lean on the back, they can slap away more freely and do more work than if truth to the square be insisted on; and, moreover, when the stone comes to be laid, the inequality of pressure will produce a fine joint without any trouble on the part of the setter. To this vicious practice of working ashlar lean on the bed, the skirping of the face-work and bulging of the walls may generally be attributed; and it is principally owing to its having been specified that drafts be put along the backs of the beds of the ashlar, and the stone kept full, that the great pressure on the three-foot walls of the pillars of the Dean Bridge has produced no skirps or cracks in any part of the work.

It remains to be explained by what method the upper arches were executed, so as to allow of their subsiding freely upon the centres being struck, without receiving any obstruction from the lower spandrels; for it is evident, that had the centres of the main arches been struck and the spandrels completed close up to the soffit of the upper arches, the upper arches would, upon their centres being subsequently struck, have been subject to unequal depression; the interior three feet two inches of the soffit being hard upon the lower spandrel walls, and the projecting five feet left to subside freely by its own weight, which unequal bearing would infallibly have disturbed the whole superstructure. And it is equally evident that the lower and upper arches, being dissimilar, would not subside equally, and therefore could not be struck at the same time dependent on each other. The course, therefore,

Bridge. pursued in the case of the Dean Bridge, was to strike the centres of the lower arches as soon as the arch-stones were laid, and immediately to proceed with the turning of the upper arches and the striking of their centres, previous to the completion of the lower spandrels. This was a most delicate operation, and we believe it to have been unprecedented; for the pilasters or pillars of the upper arches being only five feet wide, it follows that the four upper arches of ninety-six feet span each were supported solely upon their pillars of five feet thick, being only one nineteenth of the span of the arch. To accomplish this, it was evidently necessary that all the four arches should be struck as gradually and as equally as possible, and which was done with great care, never allowing the slack blocks to be driven farther at one time than sufficient to let down the centre a quarter of an inch. It was found that these upper arches subsided very nearly equally and gradually during the course of a month, by which time they attained permanent stability, and the total depression amounted to about four and a half inches each at the crown. The lower arches subsided about three inches each at the crown. In constructing the centres a subsidence of three inches was calculated upon for the lower arches, and six inches for the upper arches, and so much additional rise given to the centres accordingly, over and above what was intended for the arches when complete.

After having allowed the upper arches freely to attain their position of permanent stability, a considerable portion of their spandrel walling was built, and the centring removed, and the masonry of the lower spandrels made good up to their soffits. In completing the exterior spandrels of the upper arches, which are only eighteen inches

thick, they were connected with the interior spandrels by means of dovetailed bond-stones, which, at the same time that they gave stability and stiffness to the walls, effectually tied them to the interior work, rendering the wings and the main body of the bridge a perfectly connected mass.

In all extensive edifices composed of heavy materials, it is of primary consequence to the stability of the work that good arrangements be made whereby every stone may be laid with ease and expedition, by means of cranes or other mechanical contrivances. This point cannot be too forcibly insisted upon; for whatever pains may be taken in preparing the materials, it will frequently be found, upon setting the stones, that the bed of lime is either too full or too lean, or that the stone is in some respects unsuitable, and ought to be raised. If, therefore, it can be raised with ease and expedition, it is done at once, and the fault rectified; but if the arrangements for setting be imperfect, the uniformity of the bed of lime is disturbed before the stone is properly seated in its place, and glaring imperfections will be submitted to rather than incur the labour and loss of time consequent to its reparation. The success which has attended the execution of the Dean Bridge, and the expedition with which the work was carried on, are in a great measure attributable to the judicious manner in which the cranes, machinery, and scaffolding were constructed.

The Dean Bridge was commenced in October 1829, and completed, with the exception of the parapet, in December 1831. It is gratifying to all concerned, that not a single accident occasioning loss of life or limb occurred during the progress of the work.

See CHAIN BRIDGES.

Bridge-Town.

EXPLANATION OF THE PLATES.

Plate CXXXII. fig. 1. If AB represent the distance of any two particles of matter, and BC, DE, FG, the repulsive forces at the distances AB, AD, AF, respectively, and BC, DH, FI, the corresponding cohesive forces, then GI must be ultimately to EH as FB to BD. (Sect. I. Prop. A.)

Fig. 2. The block will support twice as great a pressure applied at A as at B. (Prop. B.)

Fig. 3. It is obvious that $ABC - ADE = ABC - CFG$, HI being = HK, and HG = HA; and the difference ABFHA is always equal to $DB \times KH$. (Prop. C.)

Fig. 4. It is evident that AB is to CD as AE to CE, or as $z + \frac{1}{2}a$ to z . (Prop. E.) It is also obvious that as z or CE is to CD, so is EF to FG. (Prop. F.)

Fig. 5. Supposing the arch AB to be so loaded in the neighbourhood of C as to require the curve of equilibrium to assume the form ADCEB, the joints in the neighbourhood of D will be incapable of resisting the pressure in the direction of the curve CD, and must tend to turn on their internal terminations as centres, and to open externally. (Prop. Y.)

Fig. 6. A, B, C, different steps in the fall of a weak arch. (Prop. Y.)

Fig. 7. Elevation and plan of Messrs Telford and Douglas's proposed iron bridge over the Thames. (Sect. V.)

Fig. 8. Elevation of Mr Darby's iron bridge at Colebrook Dale. (Sect. VI.)

Fig. 9. Elevation of Mr Burdon's bridge at Wearmouth. (Sect. VI.)

Fig. 10. Elevation of Mr Telford's bridge at Buildwas. (Sect. VI.)

Fig. 11. Elevation of Messrs Jessop's bridges at Bristol. (Sect. VI.)

Fig. 12. Elevation of Mr Telford's bridge at Dunkeld. Plate CXXXIII. fig. 1. Elevation of the bridge of the Louvre at Paris. (Sect. VI.)

Fig. 2. Comparative size of the arches of Blackfriars, Waterloo, and the new London Bridge.

Fig. 3. Elevation of Vauxhall Bridge. (Sect. VI.)

Fig. 4. Elevation of Southwark Bridge. (Sect. VI.)

Fig. 5. Plan of Southwark Bridge. (Sect. VI.)

Fig. 6. Elevation of the old London Bridge.

Fig. 7. Elevation of the new London Bridge.

Fig. 8. Plan of the new London Bridge.

Plate CXXXIV. fig. 1. Elevation of Waterloo Bridge. (Sect. VI.)

Fig. 2. Plan of Waterloo Bridge. (Sect. VI.)

Fig. 3. Section of an arch of Waterloo Bridge, showing the foundations of the piers and the spandrel walls of brick, together with the centre supporting it. The dotted line represents the direction of the curve of equilibrium. (Sect. VI.)

Plate CXXXV. Elevation and plan of the Dean Bridge, Edinburgh, and the section of an arch.

BRIDGE, in *Gunnery*, the two pieces of timber which go between the two transoms of a gun-carriage.

BRIDGE, in *Music*, a term for that part of a stringed instrument over which the strings are stretched. The bridge

of a violin is about one inch and a quarter in height, and near an inch and a half in length.

BRIDGE-TOWN, the capital of the island of Barbadoes. See BARBADOES.

Bridgend
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Bridport.

BRIDGEND, a market-town of the county of Glamorgan, in South Wales, being partly in the parish of Newcastle and partly in that of Coity, 179 miles from London. It stands on the river Ogmore, which supplies a great abundance of salmon and other fish, and the market, held on Saturday, is well supplied with all other necessities. There is a neat county-hall, where the sessions, and occasionally the county elections, are held.

BRIDGENORTH, a borough and market-town of the hundred of Stoddendon, in the county of Salop, 140 miles from London, on the river Severn. It is an ancient place, in the vicinity of which are many interesting remains of antiquity. There is a considerable trade carried on in iron, leather, pipes, malt, and building boats for navigating the Severn. The town returns two members to parliament, who are chosen by the corporation and the freemen, in number about seven hundred, over whom the family of Whitmore have long held a predominant influence. The inhabitants amounted in 1801 to 4408, in 1811 to 4179, and in 1821 to 4345.

BRIDGEWATER, a borough and market-town of the hundred of North Petherton, in the county of Somerset, 142 miles from London. It stands on the river Parret, on which vessels from sea ascend to the iron bridge, but are aground at low water. There is much trade here, as coals for the supply of the interior are imported in large quantities, and much malt and a peculiar kind of bricks are exported. There is a good market on Thursday. Two members are returned to parliament by the inhabitant householders. The inhabitants amounted in 1801 to 3634, in 1811 to 4179, and in 1821 to 6155.

BRIDLE, a contrivance made of straps or thongs of leather and pieces of iron, in order to keep a horse in subjection and obedience.

The several parts of a bridle are the bit or snaffle; the head-stall, or leathers from the top of the head to the rings of the bit; the fillet, over the fore-head and under the fore-top; the throat-band, which buttons from the head-band under the throat; the reins or thongs of leather, which, proceeding from the rings of the bit, and cast over the horse's head, are held by the rider in his hand; the nose-band, passing through loops at the back of the head-stall, and buckled under the cheeks; the trench; the cavesan; the martingal; and the chaff-halter.

Pliny assures us that one Pelethronius first invented the bridle and saddle, though Virgil ascribes the invention to the Lapithæ, to whom he applies the epithet *Pelethronii*, from a mountain in Thessaly named *Pelethronium*, where horses were first begun to be broken.

The first horsemen, not being acquainted with the art of governing horses with bridles, managed them only with a rope or a switch, and the accent of the voice. This was the practice of the Numidians, Getulians, Libyans, and Massilians. The Roman youth also learned the art of fighting without bridles, which was an exercise or lesson in the manège; and hence it is that on Trajan's column soldiers are represented riding at full speed without any bridles on.

BRIDPORT, a borough and market-town in the hundred of Beaminster and county of Dorset, 134 miles from London, on the river Brit, which is divided into two branches, one of them passing at the east, the other at the west end of the town. The manufacturing industry here is very great, producing sail-cloth, twine, nets, ropes, and other requisites for the Newfoundland fishery. The harbour is small and almost choked, but some vessels are built celebrated for their fast sailing. The streets are wide and well paved, and where the four cross streets meet is a handsome town-hall. It returns two members to parliament, chosen by the inhabitant householders. There is a

good market on Saturday. The population amounted in 1801 to 3117, in 1811 to 3666, and in 1821 to 3742.

BRIEF, in *Law*, an abridgment of the client's case, made out for the instruction of counsel on a trial at law; wherein the case of the litigant is to be briefly but fully stated.

BRIEF, or *Brieve*, in *Scots Law*, a writ issued from the Chancery, directed to any judge-ordinary, commanding and authorizing that judge to call a jury to inquire into the facts mentioned in the brief, and upon their verdict to pronounce sentence.

Apostolical BRIEFS, letters which the pope dispatches to princes or other magistrates, relating to any public affair. These briefs are distinguished from bulls, in regard the latter are more ample, and always written on parchment, and sealed with lead or green wax; whereas briefs are very concise, written on paper, sealed with red wax, and with the seal of a fisherman, or St Peter in a boat.

BRIEG, a circle in the Prussian province of Silesia, extending over 213 square miles, or 136,320 acres, containing two cities, two market-towns, sixty-two villages, and 5226 houses, inhabited by 34,342 individuals. It is divided into two parts by the river Oder, is a level district, and, on the Polish side of that river, is covered with woods. The only manufacture is that of linens. The capital of the circle, the city of Brieg, is on the banks of the Oder, a well-built town, containing four Lutheran and three Catholic churches, with several public charitable institutions. The inhabitants amount to 10,547, who are occupied in various manufactures, and carry on trade by the Oder with the Baltic Sea at Stettin.

BRIEL, a town in the province of South Holland, in the Netherlands, the chief place of a circle of the same name, on the north side of the island Boorne, near the mouth of the Maas. It contains about 3800 men, of whom many are fishermen and pilots. It is interesting as the place the capture of which laid the foundation of the power and wealth of the United Provinces. Long. 4. 3. 45. E. Lat. 51. 54. 15. N.

BRIEY, an arrondissement of the department of Moselle, in France, extending over 474 square miles, comprehending five cantons and 165 communes, with 56,112 inhabitants. The chief place, a town of the same name, on the river Waget, contains about 1900 inhabitants.

BRIG, or **BRIGANTINE**, a merchant-ship with two masts. This term is not universally confined to vessels of a particular construction, or which are masted and rigged in a manner different from others, but is variously applied, by the mariners of different European nations, to a peculiar sort of vessel in their own marine. Amongst British seamen this description of vessel is distinguished by having her main-sails set nearly in the plane of her keel, whereas the main-sails of larger ships are hung athwart, or at right angles with the ship's length, and fastened to a yard which hangs parallel to the deck. In a brig, the foremost edge of the mainsail is fastened in different places to hoops which encircle the main-mast, and slide up and down it as the sail is hoisted or lowered; and it is extended by a gaff above and a boom below.

BRIGADE, in the military art, signifies the union of several squadrons or battalions under the command of a colonel, who has also the rank of brigadier-general in the army. A *brigade of artillery* consists of a certain number of cannon or field-pieces, with the necessary munitions, stores, and gunners. The soldiers attached to these guns are also collectively denominated a brigade, and are under the command of a superior officer of artillery. A *brigade of cavalry* consists of different regiments, making together eight or ten squadrons, and commanded by a colonel of

Brief
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Brigade.

Br. de cavalry, who has the rank of brigadier-general in the army. A *brigade of dragoons* consists of different regiments of dragoons, making together eight squadrons or more, and commanded by a colonel of dragoons, who has also the rank of brigadier-general in the army. A *brigade of infantry* consists of two or more regiments of foot, making together four, five, six, eight, or more battalions, commanded by a colonel of foot, who has the rank of brigadier-general in the army. And, generally, according to the most modern arrangement of troops, two or more regiments constitute a brigade, two or more brigades a division, two or more divisions a corps d'armée, and two or more corps d'armée a grand army.

BRIGADE-Major is an officer appointed by the brigadier to assist him in the management and ordering of his brigade.

BRIGADIER, a military officer, whose rank is next above that of colonel, and who is intrusted with the command of a brigade. In Great Britain this rank is in abeyance during peace, but revived in actual service in the field. Every brigadier marches at the head of his brigade upon duty. The *brigadier des armées* of the French service corresponds to our brigadier-general, and, like him, has the command of a brigade of cavalry, dragoons, or infantry.

BRIGANDINE, a coat of mail, a kind of ancient defensive armour, consisting of thin jointed scales of plate, pliant and easy to the body.

BRIGG, or **GLANDFORD BRIGG**, a market-town in the hundred of Yarborough and county of Lincoln, 153 miles from London, on the river Ancolme, which is navigable to the Humber. There is a large corn-market here on Thursday. The inhabitants amounted in 1801 to 1327, in 1811 to 1497, and in 1821 to 1674.

BRIGGS, **HENRY**, one of the greatest mathematicians of the sixteenth century, was born at Warley Wood, in the parish of Halifax, Yorkshire, in the year 1556. In 1592 he was appointed examiner and lecturer in mathematics, and soon afterwards reader of the physical lecture founded by Dr Linacer. When Gresham College in London was established, he was chosen the first professor of geometry there, about the beginning of March 1596. In 1609 Mr Briggs contracted an intimacy with Usher, afterwards archbishop of Armagh, which continued many years, and was kept up chiefly by letters, two of which, written by the subject of this notice, are still extant. In one of these letters, dated in August 1610, he tells his friend he was engaged on the subject of eclipses; and in the other, dated in March 1615, he acquaints him with his being wholly employed about the noble invention of logarithms, then lately discovered, and in the improvement of which he had afterwards a large share. In his lectures at Gresham College, he proposed the alteration of the scale of logarithms, from the hyperbolic form which Napier had given them, to that in which unity is assumed as the logarithm of the ratio of ten to one; and soon afterwards he wrote to the inventor to make the same proposal to himself. In 1616 Briggs paid a visit to Napier at Edinburgh, in order to confer with that eminent person respecting the suggested change; and next year he repeated his visit for a similar purpose. During these conferences the alteration proposed by Briggs was agreed upon; and on the return of the latter from his second visit in 1617, he accordingly published the first chiliad of his logarithms. In 1619 he was appointed Savilian professor of geometry at Oxford, and resigned his professorship of Gresham College on the 25th of July 1620. Soon after his settlement at Oxford he was incorporated master of arts in that university, where he continued a laborious and studious life, employed partly in discharging the duties of his office, and partly in the computation of logarithms and in other

useful works. In 1622 he published a small tract on the "North-west Passage to the South Seas, through the continent of Virginia and Hudson's Bay;" and in 1624 he printed, at London, his *Arithmetica Logarithmica*, in folio, a work containing the logarithms of thirty thousand natural numbers to fourteen places of figures besides the index. He also lived to complete a table of logarithmic sines and tangents for the hundredth part of every degree to fourteen places of figures besides the index, with a table of natural signs to fifteen places, and the tangents and secants for the same to ten places; all of which were printed at Gouda in 1631, and published in 1633 under the title of *Trigonometria Britannica*. In the construction of these works, the author, besides immense labour and application, displayed great powers of genius and invention; and in his investigations may be detected the germs of discoveries in mathematics which are generally considered as of later invention, namely, the binomial theorem, the differential method and construction of tables by differences, the interpolation by differences, together with angular sections, and several other things of scarcely inferior importance. Mr Briggs terminated his laborious and useful life on the 26th of January 1630, in the seventy-fourth year of his age. Dr Smith gives him the character of being a man of great probity, a contemner of riches, and contented with his own station, preferring a studious retirement to all the splendid circumstances of life. His works are, 1. A Table to find the Height of the Pole, the Magnetical Declination being given, London, 1602, 4to; 2. Tables for the Improvement of Navigation, printed in the second edition of Edward Wright's treatise entitled "Certain Errors in Navigation detected and corrected," London, 1610, 4to; 3. A Description of an Instrumental Table to find the part proportional, devised by Mr Edward Wright, London, 1616 and 1618, 12mo; 4. *Logarithmorum Chilias prima*, London, 1617, 8vo; 5. *Lucubrationes et Annotationes in opera posthuma J. Neperi*, Edinburgh, 1619, 4to; 6. *Euclidis Elementorum VI. libri priores*, London, 1620, folio; 7. A Treatise on the North-west Passage to the South Sea, London, 1622, 4to, reprinted in Purchas's Pilgrims, vol. iii. p. 852; 8. *Arithmetica Logarithmica*, London, 1624, folio; 9. *Trigonometria Britannica*, Goudæ, 1663, folio; 10. Two Letters to Archbishop Usher; 11. *Mathematica ab Antiquis minus cognita*; and some other works, as his Commentaries on the Geometry of Peter Ramus, and Remarks on the Treatise of Longomontanus respecting the quadrature of the Circle, which have not been published.

BRIGGS, **William**, an eminent physician in the latter end of the seventeenth century, was the son of Augustin Briggs, Esq. four times member for the city of Norwich, where our author was born. He studied at the university of Cambridge; and his genius leading him to cultivate physic, he travelled into France, where he attended the lectures of the celebrated anatomist M. Vieussens at Montpellier. After his return he published his *Ophthalmographia* in 1676. The year following he was created doctor of medicine at Cambridge, and soon after was made fellow of the College of Physicians at London. In 1682 he resigned his fellowship in favour of his brother; and the same year his *Theory of Vision* was published by Hooke. The ensuing year he sent to the Royal Society a continuation of that discourse, which was published in their Transactions; and the same year he was appointed by King Charles II. physician to St Thomas's Hospital. In 1684 he communicated to the Royal Society two remarkable cases relating to vision, which were likewise printed in their Transactions; and in 1685 he published a Latin version of his *Theory of Vision*, at the desire of Mr, afterwards Sir Isaac Newton, professor of mathematics at Cam-

Briggs.

Bright-helmstone bridge, with a recommendatory epistle from him prefixed to it. He was afterwards appointed physician in ordinary to King William, and continued in great esteem for professional skill till his death, which took place in September 1704.

Brignoles.

BRIGHTELMSTONE, or **BRIGHTON**, a town on the sea-coast, in the hundred of Whalesbone and rape of Lewes, in the county of Sussex. The growth of this place is one of those manifestations of the progress of wealth and the increased power of gratification in this kingdom, which on reflection cannot fail to excite astonishment. This town, a small fishing place till 1784, with neither commerce nor manufactures, and with no peculiar advantages even for sea-bathing, which formed the only pretext for visiting it, has, by the mere force of fashion acting upon rapidly-augmented wealth, grown up to be a city almost of palaces, exhibiting a display of every comfort and even luxury, and containing a population of more than 40,000 persons. It is built under the shelter of the South-down Hills, which protect it from the northern and eastern blasts, and hence it is as much a place of resort for the idle, the invalid, and the mere fashionist, in the winter, as it was at its first establishment in the summer season. Magnificent squares and parades have been built, which have speedily found occupants; the embellishments have kept pace with their growth; churches and chapels have been erected to supply religious aid to all sects and all tastes; hotels, club-houses, and other establishments, have been formed for purposes of amusement; carriages and horses are in readiness equal to the demand for them; and every necessary, every accommodation, and almost every luxury, may be found in the markets, the shops, and the repositories. By means of steam-boats it has become one of the passages to France, and from thence the inhabitants can obtain supplies of fruit, vegetables, game, poultry, and other articles at reasonable rates. In addition to other inducements, a German institution for producing all the waters of the most celebrated medicinal springs on the Continent has, at much expense, and with very great scientific skill, been constructed. A new town has been built or is building, called Kemp Town, to contain houses of a large kind, sufficient for ten thousand more inhabitants. According to the government census, the population amounted in 1801 to 7339, in 1811 to 12,012, and in 1821 to 24,429; but the greatest proportional increase has been since the last of these years.

BRIGITTINS, or **BRIDGETINS**, more properly *Brigittins*, a religious order, so called from their founder, St Bridget, or Birgit, a Swedish lady of the fourteenth century, whom some represent as a queen, but Fabricius, on better grounds, considers as a princess, the daughter of King Birgenes, legislator of Upland, and famous for her revelations. The Brigittins are sometimes also called the Order of our Saviour, from their pretending that Christ himself dictated to St Bridget the rules and constitutions observed by them. In the main, the rule is the same as that of St Augustin; only with certain additions supposed to have been revealed by Christ, and hence called the Rule of our Saviour. This order spread considerably through Sweden, Germany, the Netherlands, and other parts. In England we read but of one monastery of Brigittins, which was built in 1415 by Henry V., opposite to Richmond, and is now called Sion House. The revenues were reckoned at L.1495 per annum.

BRIGNOLES, an arrondissement of the department of the Var, in France. Its extent is 492 square miles, and it contains eight cantons, twenty-six communes, and 66,184 inhabitants. The chief place, of the same name, is situated on the river Salme, in a mountainous district, containing 5301 souls. Long. 6. 50. E. Lat. 43. 24. N.

BRILLIANT, in a general sense, something that has a bright and lucid appearance.

BRILLIANTS, a name given to diamonds of the finest cut. See **DIAMOND**.

BRILON, a circle in the Prussian government of Arnberg, and province of Westphalia. It extends over 376 square miles, or 240,640 acres, contains six cities, four market-towns, eight parishes, and 105 hamlets, with 3652 houses, and 29,082 inhabitants. Although the northern part is hilly and woody, the valleys to the south are fertile, and yield sufficient corn and cattle for the dense population. The chief object of industry is the linen trade. The capital, which gives its name to the circle, is near the river Ruhr. It was formerly one of the Hans Towns. It contains two churches, 396 dwelling-houses, and 2766 inhabitants, chiefly employed in the various branches of the linen trade. Long. 8. 4. 10. E. Lat. 51. 22. 20. N.

BRIM denotes the utmost verge or edge, especially of round things. The brims of vessels are made to project a little over, to prevent liquors, when poured out, from running down the side of the vessel. The brimming of vessels was contrived by the ancient potters, in imitation of the supercilium or dip of the cornices of columns.

BRINDISI, a city on the shores of the Adriatic, in the province of Otranto and kingdom of Naples. It was formerly fortified, but its defences are now dilapidated. It contains a cathedral, several cloisters and nunneries, and at present only 6150 inhabitants. The harbour is now nearly choked up with sand, and hence its importance has declined gradually from the state which it had attained under the name of Brundisium, when the population amounted to 60,000, and it enjoyed an extensive trade. Long. 17. 55. E. Lat. 40. 52. N.

BRINDLEY, JAMES, a man celebrated for mechanical inventions, and particularly skilful in planning and conducting inland navigation, was born in 1716, at Tunsted in Derbyshire. Through the mismanagement of his father, his education was totally neglected; and, at seventeen, he bound himself apprentice to a mill-wright, near Macclesfield, in Cheshire. He served his apprenticeship, and afterwards setting up for himself, by inventions and contrivances of his own advanced the mill-wright business to a degree of perfection which it had not attained before. The consequence was, that his fame as an ingenious mechanic spreading widely, his genius was no longer confined to the business of his profession. In 1752 he erected a very extraordinary water-engine at Clifton, in Lancashire, for the purpose of draining coal mines; and, in 1755, he was employed to execute the larger wheels for a new silk mill at Congleton, in Cheshire. The potteries of Staffordshire were also about this time indebted to him for several valuable additions to the mills used by them for grinding flint-stones. In 1756 he undertook to erect a steam-engine near Newcastle-under-Line, upon a new plan; and it is believed that he would have brought this engine to a great degree of perfection, if some interested engineers had not opposed him.

His attention, however, was soon afterwards called off to another object, which in its consequences has proved of high importance to trade and commerce; namely, the projecting and executing of inland navigations. By these navigations the expense of carriage is lessened; a communication is opened from one part of the kingdom to another, and from each of these parts to the sea; and hence products and manufactures are afforded at a moderate price. The Duke of Bridgewater having at Worsley, about seven miles from Manchester, a large estate abounding with coal, which had hitherto lain useless because of the expense of land-carriage, and being desirous to work these mines, perceived the necessity of construct-

Brindley. ing a canal from Worsley to Manchester; upon which occasion Brindley was consulted, and having declared the scheme practicable, an act for this purpose was obtained in 1758 and 1759. But as it was afterwards discovered that the navigation would be more beneficial if carried over the river Irwell to Manchester, another act was obtained to vary the course of the canal agreeably to the new plan, and likewise to extend a side-branch to Longford Bridge in Stretford. Brindley, in the mean time, had begun these great works, being the first of the kind ever attempted in England with navigable subterraneous tunnels and elevated aqueducts; and, in order to preserve the level of the water, and free it from the usual obstructions of locks, he carried the canal over rivers and many large and deep valleys. When it was completed as far as Barton, where the Irwell is navigable for large vessels, he proposed to carry it over that river by an aqueduct of thirty-nine feet above the surface of the water; and though this project was treated as wild and chimerical, yet, supported by his noble patron, he began his work in September 1760, and the first boat sailed over it in July 1761. The duke afterwards extended his ideas to Liverpool, and obtained, in 1762, an act for branching his canal to the tide-way in the Mersey; this ramification of the work being carried over the rivers Mersey and Bolland, and over many wide and deep valleys.

The success of the Duke of Bridgewater's undertakings encouraged a number of gentlemen and manufacturers in Staffordshire to revive the idea of a canal navigation through that county, and Brindley was therefore engaged to make a survey from the Trent to the Mersey. This canal was begun in 1766, conducted under Brindley's direction as long as he lived, and finished after his death by his brother-in-law Mr Flemshall in May 1777. The proprietors called it the Canal from the Trent to the Mersey; but the engineer, more emphatically, the Grand Trunk Navigation, on account of the numerous branches, which, as he justly supposed, would be every way extended from it. It is ninety-three miles in length, and, besides a large number of bridges over it, has seventy-six locks and five tunnels. The most remarkable of the tunnels is the subterraneous passage of Harecastle, being 2880 yards in length, and more than seventy yards below the surface of the earth. The scheme of this inland navigation had employed the thoughts of the ingenious part of the kingdom for upwards of twenty years before, and some surveys had been made; but Harecastle Hill, through which the tunnel is constructed, could neither be avoided nor overcome by any expedient which the most able engineers could devise. It was Brindley alone who surmounted this, and other similar difficulties arising from the variety of strata and quicksands, which no one but himself would have attempted to conquer.

Brindley was engaged in many other similar undertakings; for a fuller account of which the reader is referred to the *Biographia Britannica*, and to a curious and valuable pamphlet, published many years since, entitled *The History of Inland Navigations, particularly that of the Duke of Bridgewater*. Brindley died at Turnhurst in Staffordshire on the 27th September 1772, in his fifty-sixth year, being supposed to have shortened his days by too intense application, and to have brought on a hectic fever, which continued in his system for some years before it consumed him. He never indulged or relaxed himself in the common diversions of life, not having the least relish for them; and though once prevailed on to see a play in London, yet he declared that he would on no account be present at another, because it so disturbed his ideas for several days after as to render him unfit for business. When any extraordinary difficulty occurred to him in the exe-

cution of his works, he generally retired to bed, and lay there one, two, or three days, till he had surmounted it. He then got up and executed his design without any drawing or model; for he had a prodigious memory, and carried every thing in his head.

As his station in life was low, and his education totally neglected, so his exterior accomplishments were suitable to them. He could indeed read and write, but very indifferently; and he was perhaps as thoroughly *abnormis sapiens*, "of mother-wit, and wise without the schools," as any man that ever lived. "He is as plain a looking man," says a writer of the time, describing him, "as one of the boors in the Peak, or his own carters; but when he speaks, all ears listen; and every mind is filled with wonder at the things he pronounces to be practicable." The same author adds, "Being great in himself, he harbours no contracted notions, no jealousy of rivals; he conceals not his method of proceeding, nor asks patents to secure the sole use of the machines which he invents and exposes to public view. Sensible that he must one day cease to be, he selects men of genius, teaches them the power of mechanics, and employs them in carrying on the various undertakings in which he is engaged. It is not to the Duke of Bridgewater only that his services are confined; he is of public utility, and employs his talents in rectifying the mistakes of despairing workmen and artizans. His powers shine most in the midst of difficulties; when rivers and mountains seem to thwart his designs, then appears his vast capacity, by which he makes them subservient to his will." Happening on one occasion to be examined before a committee of the House of Commons, and to express a decided preference for artificial navigation as a means of internal communication, a member asked him, "For what purpose, then, do you think rivers were created?" "To furnish water for navigable canals," replied Brindley after a moment's hesitation.

BRINE, or PICKLE, water saturated with saline particles.

BRINE also denotes a pickle pregnant with salt, wherein things are steeped for preservation.

BRINE-Pans, the pits where the salt water is retained, and suffered to stagnate, that by the action of the sun it may be converted into salt. There are divers sorts of salt-pans, as the water-pans, second pan, sun-pan; the water being transferred only from one to another.

BRINE-Pit, in salt making, the salt spring from which the water to be boiled into salt is taken. There are some of these springs in many places. That at Namptwich in Cheshire is alone sufficient, according to the account of the people of the place, to yield salt for the whole kingdom; but it is under the government of certain individuals who, that the market may not be overstocked, permit only a certain quantity of the salt to be made yearly.

BRINE-Springs are fountains which flow with salt water instead of fresh. Of these there are a good number in England; but, though not peculiar to this island, they are far from being common in the countries on the Continent.

To BRING-to, in Navigation, to check the course of a ship when she is advancing, by arranging the sails in such a manner that they shall counteract each other, and prevent her either from retreating or moving forward. In this situation the ship is said to lie by, or to lie to; having, according to the sea phrase, some of her sails *aback*, to oppose the force of those which are full; or having them otherwise shortened by being furled, or hauled up in the brails.

BRINGING-TO is generally used to detain a ship in any particular station, in order to wait the approach of some other that may be advancing towards her; or to retard

Brine
||
Bringing-
to.

Brioude her course occasionally near any port in the course of a voyage.

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Brisson.

BRIOUDE, an arrondissement in the department of the Upper Loire, in France, extending over 706 square miles, and containing eight cantons and 118 communes, with a population of 76,374 persons. The capital is the city of the same name, on the left bank of the river Allier, with 5486 inhabitants. Long. 3. 15. E. Lat. 45. 14. N.

BRISSON, MATHURIN JAMES, a zoologist and natural philosopher, born at Fontenay-le-Comte, 3d April 1723, the son of Mathurin Brisson and Louisa Gabrielle Jourdain. He was originally intended for the church, but he had acquired at an early age a taste for natural history, which was particularly encouraged by the advantage that he enjoyed of passing his holidays with the justly-celebrated Reaumur, who had an estate near Fontenay. At the age of twenty-four he had made great progress in his theological studies, and had fully qualified himself for the rank of a subdeacon; but his courage failed him at the time appointed for taking orders, and he then determined to confine himself to the study of physical sciences. Reaumur had the direction of the chemical laboratory of the Academy of Sciences, and had given up the salary attached to it to several young men in succession, whom he appointed as his assistants, and of whom Pitot and Nollet became afterwards the most distinguished. He now chose Brisson for the situation, which served him, as it had done his predecessors, rather as a step in his advancement with respect to general science, than in enabling him to pursue any objects more immediately chemical; and he followed his passion in attaching himself almost exclusively to natural history. The collection of Reaumur furnished him with ample materials for his studies, and with the principal subjects described in his works on the *Animal Kingdom*. The first of these was published in 1756, containing quadrupeds and cetaceous animals. It consists of simple descriptions of the different species, together with synonyms in various languages, more in the nature of a prodromus than of a complete history. His *Ornithologie* appeared in 1760, forming six volumes, and containing a number of well-executed plates. But upon Reaumur's death, the collection having been added to the royal cabinet, Messrs Buffon and Daubenton, the directors of that cabinet, not affording him all the accommodations that he expected, he discontinued the work, and altogether renounced the study of natural history in favour of natural philosophy.

M. Brisson had been chosen a member of the Academy of Sciences in 1759: he soon afterwards associated himself with the Abbé Nollet in delivering lectures on experimental physics, and obtained the reversion of his appointments of professor in the college of Navarre, and instructor of the royal family in natural philosophy and natural history. The subject of electricity was at this time warmly debated between Nollet and Franklin; and M. Brisson had a difficult task to perform, in discussing the merits of a mistaken friend and an overbearing opponent; but, in fact, this department of science was at that time too little understood to make it disgraceful for Nollet to be in error with respect to the utility of conductors, or for Brisson to remain neutral upon this and other similar questions. He seems, however, by no means to have adhered to the character of neutrality in his anonymous *Translation of Priestley's History of Electricity*, published in 1771, and accompanied by notes, which exhibit a spirit of acrimonious criticism, not at all calculated to enhance the merit of the work which he wished to introduce to the notice of his countrymen. He also attempted, in an *Essay on Waterspouts*, published in the *Memoirs of the academy*, to explain a variety of electrical phenomena,

by means of the different currents of fluid imagined by Nollet, but certainly with very little success.

He afterwards undertook a course of experiments on the *Specific Gravity of Alcohol and Water*, mixed in different proportions, which led him to a conjecture, at that time somewhat singular, that water was not a homogeneous substance. He assisted M. Trudaine and other observers in the experiments which they made on *Heat and Light* with the powerful lens of Bernière; and, in conjunction with M. Cadet, he endeavoured to disprove the opinion of Beccaria, that electricity has a power of reviving the *metallic oxides*. He also made experiments on the *refractive powers* of fluids which might be substituted for flint glass in the object-glasses of telescopes; on the utility of different kinds of *steel for magnetical purposes*; and on the mode of renewal of the *shells of some species of snails*.

In 1772, M. Brisson published a memoir on the *Specific Gravities of Metals*, a subject which, in all its extent, occupied a great portion of his attention during twenty years of his life. The results of his experiments on a great variety of substances were collected into a single volume of *Tables of Specific Gravities*, which was published in 1787. It was principally for the use of students who attended his lectures that he published his *Traité de Physique* and his *Dictionnaire*, both of them containing elementary and popular information, rather calculated exclusively for the immediate purpose which they were intended to serve, than for being of permanent utility in the promotion of the sciences. At a late period of his life he renewed his attention to the subject of chemistry, when the discoveries of his junior contemporaries had given greater certainty and precision to its laws; and his last work was an *Elementary Treatise* on that science, intended for the use of his pupils in the central school.

His whole life was occupied in his studies, and the history of his various works comprehends the history of everything that is to be recorded concerning him. After eighty years of uninterrupted activity of mind, an attack of apoplexy reduced him to a state of second childhood, and effaced from his memory all traces even of his native language, except a few words of the dialect of Poitou, which he had spoken when he was a boy. He died on the 23d of June 1806, and his place in the academy was filled by M. Guy-Lussac. (*Delambre, Mém. Inst. par. vii. Hist. p. 189.*) (L. L.)

BRISSOT, PETER, one of the ablest physicians of the sixteenth century, was born at Fontenay-le-Comte, in Poitou, in 1478. He studied at Paris, and, having taken his doctor's degree, bent his thoughts on reforming physic, by restoring the precepts of Hippocrates and Galen, and exploding the maxims of the Arabians; for which purpose he publicly explained Galen's works, instead of those of Avicenna, Rhases, and Mesué. He afterwards resolved to travel to acquire the knowledge of plants; and going to Portugal, he practised physic in the city of Evora. His new method of bleeding in pleurisies, on the side where the pleurisy was situated, raised a kind of civil war among the Portuguese physicians, and was brought before the university of Salamanca, which at last gave judgment, that the opinion ascribed to Brissot was the pure doctrine of Galen. The partisans of Denis, his opponent, appealed in 1529 to the emperor, to prevent the practice, as being attended with destructive consequences; but Charles III. duke of Savoy happening to die at this time of a pleurisy, after having been bled on the opposite side, the prosecution dropped. He wrote an *Apology* for his practice, but died before it was published, in 1552, by his friend Anthony Luceus. Renatus Moreau printed a new edition at Paris in 1622, and annexed to it a treatise entitled

Brissot. *De Sanguinis Missione in Pleuritide*, together with a life of Brissot.

BRISSET, JOHN PETER, the chief of the *Brissotine* or pure republican party in France during the early stages of the revolution, was born at the village of Ouarville, near Chartres, in the Orleanois, on the 14th of January 1754. His father, who was a pastry-cook, gave his son a liberal education, and Brissot became an author when he had scarcely left college. He exhibited a decided predilection for politics, and displayed an early zeal for republican principles. The boldness of his writings against the inequality of ranks excited the displeasure of the government, and subjected him to a prosecution and imprisonment in the Bastille. Having been restored to liberty through the influence of the Duke of Orleans, at the solicitation of Madame de Genlis, he married one of the duchess's women, and soon afterwards went to England, with secret instructions, it is said, from the lieutenant of the police. Others assert that he came over to London to avail himself of the freedom of the press in conducting a periodical publication, the design of which was to enlighten the people of France on the subject of civil liberty. It is certain that he endeavoured to maintain himself in London by his literary talents; but the failure of this attempt subjected him to embarrassments, from which he was relieved by the liberality of a friend, and he then returned to his native country.

Having again rendered himself obnoxious to the government by an attack on the administration of the Archbishop of Sens, he escaped a second imprisonment by a journey to Holland. During a temporary residence at Mecklin he published a periodical paper called *Le Courrier Belgique*. In the beginning of the year 1788 he repaired to America; but on the approach of the revolution he returned to Paris, resolved to take an active part in the scenes which were just preparing. He commenced his revolutionary career in 1789, by the publication of some pamphlets, and particularly of a journal entitled *Le Patriote François*. He belonged to the *Représentation des Communes*, which was formed in the capital a short time previous to the memorable 14th of July. On the storming of the Bastille, the keys were deposited with him. He was elected president of the Jacobin Club; and, in consequence of his zeal and activity in the revolutionary cause, he was appointed by his colleagues a member of the *Comité des Recherches*, which served as the model of all those committees which were afterwards successively formed under similar denominations, and with similar objects; such as the *Comités de Surveillance*, *de Sureté Générale*, *de Salut Public*, &c. Of this committee Brissot was the president; and, while in this situation, he acquired a number of enemies. A French writer of the name of Morande published at Paris, in 1791, a periodical pamphlet, under the title of *Argus*, in which he assailed the character of Brissot with great bitterness, representing his conduct in the most odious colours, and even accusing him of robbery; an accusation which, there is reason to believe, was utterly calumnious.

On the flight of the royal family in 1791, Brissot, in concert with the Chevalier de Laclous, drew up the famous petition of the *Champ de Mars*, demanding the abdication of the king, which became the signal for a dangerous insurrection, that was with difficulty quelled by the interposition of the national guard. This circumstance is said to have been the occasion of his quarrel with M. de Lafayette, to whom he had previously been zealously attached. At this period the republican faction began to assume a consistent form, and to utter their sentiments with freedom and boldness. Brissot, who had been one of its first and most zealous apostles, was re-

turned a member to the National Assembly, in spite of the opposition of the court, to whom he had become extremely formidable; and from this time he displayed an implacable enmity to the king. The National Assembly attributing to Brissot talents which he does not appear to have possessed, appointed him a member of the diplomatic committee, of which he became the habitual organ; and in this capacity he was the constant advocate of the most violent public measures, and never ceased to demand a declaration of war against all the powers of Europe. In order to attain this object, it was necessary to remove the ministers, whose dispositions were favourable to peace. Brissot accordingly attacked them all, but particularly M. Delessart, who was at the head of the department of foreign affairs; and, by repeated denunciations, he at length succeeded in obtaining a decree of accusation against him. His place was supplied by Dumouriez, under whose administration war was declared against the emperor of Germany, on the 20th of April 1792. From this period, however, the political influence of Brissot began to decline. Robespierre, with whom he had previously been intimately connected, now declared himself his enemy, denounced him at the Jacobin Club as a traitor to his country and an enemy of the people, and continued to persecute him with unrelenting rancour, until he finally effected his destruction. Alarmed at the storm which was gathering around him, Brissot, in concert with the other leaders of his party, attempted to form a reconciliation with the constitutional royalists; but this attempt having proved abortive, he reverted to his former opinions and line of conduct, and continued to denounce to popular vengeance all those whom he knew to be attached to the king. But although his writings may naturally be supposed to have excited those dispositions among the people which gave rise to the atrocities of the times, he had no direct influence on the revolution of the 10th of August, which appears to have been planned and directed by Danton. He was chosen a deputy to the National Convention for the department of the Eure, where he played only an inferior part, and was continually exposed to the rancorous attacks of Robespierre. It was Brissot, however, who, as the organ of the diplomatic committee, obtained the declaration of war against England and Holland, on the 1st of February 1793. This may be considered as the last act of his political life; for from thenceforth he was only occupied in defending himself against his numerous enemies.

The party distinguished by the name of the *Mountain* had now acquired a complete ascendancy, and meditated the destruction of their opponents, the *Girondists*, to which latter party Brissot was attached. Having at length been proscribed, after the revolution of the 31st of May, he was arrested at Moulins while attempting to make his escape into Switzerland, sent to Paris, subjected to a mock trial before the revolutionary tribunal, and beheaded on the 31st of October 1793, at the age of thirty-nine.

Brissot was somewhat below the middle size, a little deformed, and of a feeble constitution. His countenance was pale and melancholy, and he affected an extreme simplicity in his dress. With regard to his intellectual character, his talents appear to have been much beneath his reputation, and he certainly possessed more zeal than judgment. Notwithstanding the violence of his writings, declamations, and public conduct, however, he was not deficient in humanity; and, in the intercourse of private life, his manners are said to have been mild and accommodating. As an author, Brissot has not much merit; his style is monotonous, verbose, and tedious; and, upon the whole, it is wonderful that, with such slender abilities, he should have acquired so great an ascendancy in public

Brissot.

Bristol. opinion. The best articles of his journal are said to have been written by his secretary Dupré. The following are the principal productions of his pen:—1. *Moyens d'Adoucir la Rigueur des Lois Penales en France*, Chalons, 1781, 8vo; 2. *Un Independant de l'Ordre des Avocats sur la Décadence du Barreau en France*, 1781, 8vo; 3. *De la Vérité, ou Méditations*, &c. 1782, 8vo; 4. *Le Philadelphen à Geneve*, 1783, 8vo; 5. *Théorie des Lois Criminelles*, 1781, 2 vols. 8vo; 6. *Bibliothèque Philosophique du Législateur, du Politique, du Jurisconsulte*, 1782–1786, 10 vols. 8vo; *Tableau de la Situation Actuelle des Anglais dans les Indes Orientales*, &c. 1784–5, 8vo; 8. *Journal du Lycée de Londres*, &c. published in monthly numbers, 1784, 8vo; 9. *Un Défenseur du Peuple à l'Empereur Joseph II.*, sur son Règlement concernant l'Emigration, &c. 1785, 12mo; 10. *Examen Critique des Voyages dans l'Amérique Septentrionale*, par le Marquis de Chatellux, 1786, 8vo; 11. *Voyages en Europe, en Asie, et en Afrique*, translated from the English, with notes, 1786 and 1790, 2 vols. 8vo; 12. *Nouveau Voyage dans les Etats-Unis de l'Amérique Septentrionale*, 1791, 3 vols. 8vo. To the first volume of this work was prefixed a life of Brissot, which was translated into English, and published separately in 1794. Besides these works, Brissot wrote a variety of pamphlets, and articles inserted in periodical publications, which it is unnecessary to enumerate. See the life of Brissot, above mentioned, and the *Biographie Universelle*.

BRISTOL, a city of England, partly within the boundary of the county of Somerset, and partly in that of Gloucester, though it is a county of itself; distant 119 miles from London, and 13 miles from Bath. It is situated in a valley, rather contracted, at the junction of the rivers Frome and Avon, which, by the construction of a canal and locks, have been formed into a basin, where vessels, which lay on the ground formerly at low water, are now kept constantly afloat. From this floating dock the ships are lowered by locks into the united stream, which joins the Severn a few miles below the city. Bristol is a city of extensive and beneficial commerce, and that with almost every part of the globe. The trade with the West Indies is the most considerable; that with Spain and Portugal, with the Baltic ports, with the Mediterranean, with Africa, and the East Indies, if inferior to that of London and Liverpool, comes next to the latter place. There are considerable manufactures also in and near the city, especially of glass, sugar, braziers and tin ware, snuff, tobacco, beer, soap, corn, spirits, vinegar, sugar refineries, white lead, and many smaller articles. It has, from its local position, an advantageous inland trade; and is a kind of emporium for South Wales, and the northern parts of Somerset, Devon, and Cornwall, to which there is a constant water conveyance; whilst by means of other canals goods are transmitted to the central parts of the kingdom. Many ships are built here; and the equipment of them, as well as the barges and trows for inland navigation, affords considerable employment to the labouring portion of the population.

Although this city dates its origin at a remote period, and some parts of it contain streets that are narrow, crooked, and gloomy, and many houses of an antiquated appearance, yet many parts are not behind any city in England in improvements of every kind. Several new streets and squares have been built of late years in the valley; whilst in Clifton, one of the parishes which compose the city, there have been constructed crescents, parades, and streets, which vie with the best in the metropolis, and, from their beautiful situation and prospects, far exceed them. Another of the parishes of this city, Bedminster, has also much increased in beauty of buildings, as well as in the number of its inhabitants. The city is governed by a mayor, two

sheriffs, twelve aldermen, and twenty-eight common council men, besides a high steward, commonly a nobleman of high rank, and a recorder, usually a lawyer of distinguished eminence. The guilds are thirteen in number, and the whole body of freemen many thousands, and the more so as every daughter of a freeman conveys by marriage the freedom to her husband. The two members for the city are chosen by the whole body of them. Bristol contains, besides the cathedral, eighteen parish churches and five chapels, with a number of places of worship for the several descriptions of separatists from the established religion. It has two scientific institutions, social establishments, and numerous societies for the laudable purposes of benevolence, in the formation of which all the jarring political and religious parties show an honourable rivalry. There are several markets, where provisions are supplied of excellent quality, in great abundance, and at very moderate rates. The inhabitants of Bristol are more distinguished for their steady prudence than for their adventurous spirit in commerce; hence, if the city has not made occasionally such rapid advances, it has gone on steadily, and scarcely ever suffered by extensive disappointments in its commercial pursuits, or been the victim of those crises and fluctuations which have frequently occurred in other trading towns.

The hot wells near this city were formerly higher in fame than at the present day, but the water is still in estimation for its purity, and large quantities of it are dispatched to distant parts of the world. The population of Bristol has made the same regular advances as are to be found in the other ports of the British islands. In our view we include the parish of Bedminster in the city of Bristol, because it forms a part of it, as much as Westminster or Southwark do of London. The number of inhabitants thus taken amounted in 1801 to 66,922, in 1811 to 76,952, and in 1821 to 95,758. According to all probable appearance this rate of increase must have continued since the last census, which will make the present population at least 105,000 persons.

BRISTOL, a seaport town, and capital of a county of the same name, in Rhode Island. It is a very pleasant town, finely situated and handsomely built. The harbour is safe and commodious, and the place has a considerable trade. In 1820, the shipping belonging to the port amounted to 10,701 tons. The trade is carried on principally with the West Indies and with Europe. Bristol possesses a courthouse, a jail, a market-house, a masonic-hall, a public library containing about 1400 volumes, and four places of public worship. Great quantities of onions are raised here for exportation. Mount Hope, which lies about two miles north-east of Bristol, within the township, is a pleasant hill, of a conical form, and famous for having been the residence of the Indian king, Philip. The population of Bristol in 1820 amounted to 3197. It is situated fifteen miles south from Providence, fifteen north from Newport, and fifty-six south-south-west from Boston. Long. 71. 12. W. Lat. 41. 38. N.

BRISTOL, a town of the United States, in Bucks county, Pennsylvania. It stands on Delaware river, opposite Burlington in New Jersey, and contains about one hundred houses. It is a great thoroughfare, and is noted for its mills of several kinds. It is situated about eleven miles south-south-east from Newton, and about twenty north-east from Philadelphia. Long. 74. 56. W. Lat. 40. 5. N. There are several other places of this name in the United States, but of inferior note.

BRISTOL CHANNEL, a portion of the Atlantic Ocean, on the coast of Great Britain, lying between the south coast of Wales and the counties of Somerset, Devon, and Cornwall, in England.

BRITAIN, OR GREAT BRITAIN,

British and Roman Period. THE most considerable of all the European islands, is situated between fifty and fifty-eight and a half degrees of north latitude. It is bounded on the north by the North Sea, on the east by the German Ocean, on the south by the English Channel, and on the west by St George's Channel and the Atlantic Ocean. From north to south it extends about five hundred and eighty miles in length; its greatest breadth, from the North Foreland in Kent to the Land's-End in Cornwall, is about three hundred and seventy miles; and its superficial area is computed at eighty-seven thousand five hundred square miles. The figure of this island is irregular, somewhat resembling that of a wedge, to which indeed it was compared by the ancients, from its gradually narrowing towards its northern extremity; and its whole line of coast is deeply indented by bays, creeks, and estuaries, which, notwithstanding its boldness and ruggedness in many parts, afford safe and commodious harbours. From its geographical position, therefore, no less than from its natural advantages, this island seems to have been destined by nature to become the seat of a great and powerful nation.

CHAP. I.

BRITISH AND ROMAN PERIOD.

Origin of the names Albion and Britain.—The Gauls, Kelts, or Celts.—Their migrations and incursions.—Portion of Europe occupied by them at the dawn of history.—Distinctive characters of the race.—Branches of the great Celtic family.—Celts the earliest inhabitants of Britain.—Followed by invaders of the Gothic or Teutonic race.—Predominance of the latter.—Aboriginal Celtic population of Scotland succeeded by the Gothic.—Condition of the Britons in the time of Caesar.—Druidism.—Character and habits of the Britons.—Commerce and War.—Roman Period.—Caesar's Expeditions.—Subsequent attempts of the Romans.—Aulus Plautius.—Ostorius Scapula.—Gallant struggle of Caractacus.—His defeat in South Wales.—Betrayed.—Aulus Didius.—Attack on Anglesea by Suetonius Paulinus.—Revolt of the Britons under Boadicea.—Campaigns of Agricola.—Extent of the Roman Conquests in Britain.—Introduction of Christianity.—Hadrian, Severus, and Caracalla.—Constitution of the Roman Provincial Government.—Usurpations of Carausius and Allectus.—Constantine.—Cruelties of Paulus.—Scots and Picts.—Their inroads and ravages.—Departure of the Romans from Britain.—Distresses of the Natives.—Arrival of the Saxons under Hengist and Horsa.—Saxon Conquest.

Various etymologies have been proposed of the words *Albion* and *Britain*; the former being the ancient name of the island; the latter that which superseded it, and in time became the appellation by which it was universally known.

Originally Albion was considered as only one of the British islands, and it is described as such both by Agathemerus and Ptolemy; but being by far the largest and most important of the group, the particular name was in course of time laid aside, and the general denomination used in its stead. The etymological origin of both, however, is involved in uncertainty. Some derive that of Albion from the Greek *Ἀλφειός* or *Ἀλπίος*, identical with the Latin *Albus* and the Sabine *Alpus*, signifying *White*, and being obviously mere variations of the Celtic *Alb* or *Alp*, which has the same meaning; conceiving, with Festus, that as the mountains which separate France and Italy were called *Alpes*, by reason of their snowy covering, so

this island was denominated *Albion* on account of the chalky cliffs and soil of its southern shores, which were the portions that appeared to those who viewed it from the coast of Gaul; and this conjecture derives some countenance from the fact that the ancient Britons themselves called it *Inis-wen* or *Eilanban*, the *White Island*. Others, again, have recourse to the Phœnician, in which *Alp* signifies *High*, and contend that the name *Albion* was originally bestowed upon the island by the adventurous navigators of Phœnicia, who first visited its shores, by reason of the bold and precipitous aspect of its headlands and coasts, and that hence it is descriptive, not of the colour, but of the *physical conformation*, of these coasts.

Of the word *Britain* a still greater variety of etymologies have been proposed. Nennius derives it from *Brutus*, whom he likewise calls *Brito*, the fifth in descent from Æneas. Camden supposes it a compound of *Brith* or *Brit*, a Celtic word signifying *painted*, and *rana*, a Greek word denoting a *region*; so that, according to him, the island was called *Britannia* from its being the *country of painted people*. Carte, founding on the circumstances that the ancient Britons called themselves *Prydhain*, and their country *Inis-prydhain*, or the *Isle of the Prydhain*, conceives that *Britanni* and *Britannia* are only latinized forms of the original word *Prydhain* in the British or Celtic tongue. Somner, disliking Camden's etymology, conjectures that *Britain* is derived from *brydio*, which in the ancient language of the island signified rage, and, according to him, was intended to indicate its position in the midst of a tempestuous sea. Whittaker is equally or even more fanciful than Somner, contending that the true etymon of the word is *brith*, *briet*, *brit*, *bris*, or *brig*, which he says means *striped* or *divided*. And Bochart, whose love of the Phœnician was such that he found it every where and in every thing, conceives that this island and some others near it were denominated *Barat Anac* by the Phœnicians, that is, the *country of tin*, which, contracted into *Bratanac*, passed from them to the Greeks and Romans, and ultimately emerged in the softened forms of *Britanni* and *Britannia*. This, at least, has the merit of ingenuity to recommend it. Of the others, that of Carte seems to us to be the most natural and probable; although it leaves unexplained the word *Prydhain*, the analysis of which is essential to complete the etymology. It has been assumed by some that the name was originally bestowed on the island by foreigners; and, on this supposition, they have endeavoured to resolve it into its elements, or at least to offer a conjectural explanation of the circumstance which led to its primary application. But for our own part, we see no grounds whatever for entertaining such a notion; and think it much more likely that foreigners varied, according to their respective idioms and modes of articulation, the name in use among the natives, than that they invented, applied, and rendered general a new one, constructed on a remote and fanciful analogy, and having reference to accessory circumstances or particular localities.¹

At the period when the Greek and Roman writers began to turn their attention to the west of Europe, they found it, from the remotest extremity of Ireland to the banks of the Danube, peopled by a race called Gauls, Kelts, or Celts, who, before the practice of tillage bound them to the soil, had overspread a large portion of Spain

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¹ Carte, *History*, vol. i. pp. 4, 5, 6.

in the course of their armed migrations, and, through the passes of the Julian and Rhaetian Alps, had poured predatory bands on the great plain of northern Italy, where they established themselves, and afterwards struck a heavy blow at the rising power of Rome, stretching their dominions as far as the Appennines. This remarkable race, believed with reason to be of oriental origin, extended along the Danube till they reached the Sarmatians on the one hand, and the Thracians and Illyrians on the other; and from the central position which they thus occupied, they appear to have diverged by various natural channels to the different countries of Europe where their descendants are still to be found. How they came to establish themselves originally in such a position is uncertain. Their early migrations, undertaken for plunder rather than conquest, occurred anterior to the period of history; and we have but slender grounds for probable conjecture respecting either their extent or their antiquity. But some of the later incursions of this people into Italy and Greece are fortunately better known to us. A numerous body of Gauls, for example, deserting the bands of their countrymen who ravaged Greece, established themselves in Asia Minor under the successors of Alexander, and gave their name to the country they occupied, which was accordingly called Galatia. In the opinion of some, this body of invaders consisted wholly of Celts, while others maintain that they were of the Teutonic race; but it seems at least equally probable that they were composed of both races. With regard to the causes which produced these fierce and extensive irruptions, the learned have lost themselves in speculation, and wearied their readers with endless conjectures. The motives which led to them were in all likelihood different at different times, and they may therefore be variously ascribed to the restless and adventurous spirit of such tribes, to the ambition and rapacity of their chiefs, to the necessity which, after a certain period, urges on an unproductive race to seek new settlements, or to the resistless pressure of invading barbarians from behind, or perhaps to the simultaneous operation of several of these causes.¹

The Rhine formed the northern boundary of the Gauls, and separated them from the Germanic or Teutonic race, which spread into Scandinavia, towards the last retreat of the Finnish tribes in the Arctic solitudes, and extended, on the other side, from the shores of the Atlantic to the vast plains inhabited by the Sarmatians and Dacians. The Garonne divided them from the Aquitanians, a people who, from various circumstances, as the testimony of the ancients, and the names of rivers and mountains, appear to have been the original inhabitants of the Spanish peninsula; whilst a portion of this primitive Iberian race occupied the southern coast of Gaul from the Pyrenees to the frontier of Italy.

The intermingling, followed by the gradual fusion and amalgamation of the various races by which most countries have been successively overrun, renders it exceedingly difficult, if not impossible, to discriminate the first inhabitants from the more civilized visitants, as well as to distinguish between the different tribes of the latter. Greece, from its position near the earliest seats of civilization, was open to conquest and colonization from numerous points both by sea and land; on the side of Thracæ, on that of Asia Minor, from Egypt, and from the countries of the East. Europe, Africa, and Asia, appear at different times to have discharged portions of their population into this favoured spot; and hence has arisen the difficulty of ascertaining the number, and much more of

detecting the peculiarities, of each successive immigration Italy, again, being accessible to colonists by sea from Greece, Asia Minor, and Egypt, and always exposed to the inroads of the tribes who inhabited or were able to make themselves masters of the principal passes of the Alps, was occupied by a greater diversity of races than any other country of the West; and hence has arisen a confusion in the genealogy of its tribes, which even the profound sagacity and varied learning of Niebuhr have not succeeded in disentangling. Population appears to have originally flowed into this country from its two extremities; but in process of time the opposite streams met, and became so thoroughly intermingled, that no moral or intellectual chemistry can ever decompose them. With regard to the colonies of the Phœnicians, they encircled the Mediterranean as far as Carthage and Cadiz, whilst no Grecian colonists had as yet established themselves farther to the west than Massalia, Massilia, or Marseilles. In circumstances and times like these, the natural boundaries of nations were often irregularly changed. The course of migration was frequently diverted from its ordinary channels, and sometimes forced back towards its original source. Races were mingled so that their distinctive marks became no longer discoverable; and even languages were changed, or altogether disappeared. Of this confusion the Galatians in Asia Minor, and the Celtiberians in Spain, afford examples. Even the Belgic inhabitants of northern Gaul have been thought a mixed race, and it seems pretty certain that, from whatever cause, Teutonic tribes were generally classed amongst them. Again, although the natural tendency of an unwritten language be to break down first into dialects and afterwards into distinct languages, yet languages originally different sometimes run into each other, and coalesce in a very remarkable manner. Of this the Hindustanee and Anglo-Norman have afforded examples at the opposite extremities of the globe, both having been formed out of jargons used in intercourse between the conquerors and the conquered. The victors sometimes impose their language, with little mixture, on the vanquished; but in India every variety of dialect has been deeply tinted with Sanscrit, the original as well as the sacred language of that country; and nothing can be imagined more heterogeneous or dissimilar than the roots of most of the forms of speech which actually obtain in it.²

It may not be out of place to observe here, that the term race, as used in civil history, has a very different acceptance from that which is given to it by naturalists. The latter, confining their view to the physical form and organization of man, and making no account of language, and of those other minor varieties and peculiarities which the civil historian is obliged to notice, admit at present only five races of men; the Caucasian, the Mongolian, the Ethiopian, the American, and the Malay. Colour is considered as one of their tests or characters. The Caucasian is accounted the primitive stock, and it deviates into two extremes, equally remote and different from each other, namely, the Mongolian and the Ethiopian. But although the Mongol and the Negro differ from the European much more deeply and radically than the Hindu and the Arab, yet if the lesser difference be admitted to be the result of physical causes, operating throughout a long tract of ages, it will be difficult to prove that the greater may not at length have been produced by similar causes acting during a greater period of time. Be this as it may, however, it must be obvious that, from lengthened separation, and the natural divergency of language, the historical divisions

¹ Mackintosh, *History of England*, vol. i. *Introd.*

² Mackintosh, *ubi supra*.

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of mankind become broken into portions or subdivisions not always corresponding with the political distribution of territory among nations, and that, as the same state may contain tribes of various race, so the same race may be subject to many distinct rulers.¹

The Celtic race may be considered as subdivided into two distinct portions, with languages which, though certainly derived from a common stock, are not, it is believed, reciprocally understood. One of these cognate languages or dialects, called the Gaelic, is still spoken by the native Irish, by the Highlanders of Scotland, and in the Isle of Man; the other is the common speech of Wales and Lower Bretagne, and, till a period comparatively recent, it was spoken in Cornwall; whilst, in each branch or subdivision, the parent language seems only to differ by provincial variations, which, accumulating in a long series of ages, have produced a greater divergence than is generally found to exist between affiliated dialects. The Gaulish tribes are unable to converse with the Cimbric, yet there is abundant evidence that the Gaelic and Cymraig or Welsh are branches of the same family. Indeed it is supposed by some that the Cimbric or Cymraig followed, at a considerable interval, the Gaulish settlers; and it seems not improbable, that the tribes who spoke this form or dialect of Celtic were, as Sir James Mackintosh observes, "the same Cimbri who, in conjunction with their Teutonic allies, were expelled from the Roman territory with a slaughter so enormous, and after atrocities so unmatched, as to be suspected of exaggeration;" although it should be borne in mind "that the adversaries of the Romans were not armies, but migratory nations, bringing into the field women and children, and fierce animals," which all contributed to swell the horrors of the butchery, and first taught the Romans to dread the arms of the northern barbarians.²

That the aboriginal, or at least the earliest inhabitants of these islands were a people of Celtic origin and race, seems to be admitted on all hands, and is rendered highly probable, both from the intimations of history and the evidence of language. The former leave little doubt that the migrations and settlements of the Celtic tribes preceded those of the Scythian or Gothic nations by whom they were almost everywhere displaced; and this conclusion derives additional probability from the consideration, that the greater part of the names of mountains, lakes, and rivers, in both the British islands, are still descriptive and significant in some dialect of the Celtic language. "The appellations of these vast and permanent parts of nature," says Sir James Mackintosh, "are commonly observed to continue as unchanged as themselves." Of all the languages that ever existed, the Celtic is perhaps the richest in an appropriate and expressive nomenclature for physical objects; and the facility with which its elementary forms admit of combinations descriptive of the varieties observable in external nature, must have greatly tended to impress and perpetuate the appellations which it originally supplied. Hence it is that, after the revolution of ages, and the fluctuations of conquest, dominion, and race, together with all the changes which time and usage insensibly operate in language, the names in question are still distinctly traceable; whilst the extent to which they still obtain in both parts of Britain seems to argue the original ascendancy of the race from whose language they were derived. Had the Gothic preceded, instead of following, the Celtic colonists, the case would in all probability have been exactly, or at least very nearly, the reverse of this. As it is, however, the fact here mentioned appears to be

incompatible with any other supposition than that of Britain being originally peopled by a Celtic race; and as the Gaelic dialect explains many more of the names of external objects than that spoken by the other branch of the race, the same principle leads us to conclude, that those who employed that variety of the common or parent language were the first settlers. Beyond these probabilities the most ancient period of our history is involved in impenetrable darkness.

To the Celtic population of Britain succeeded the Gothic, by whom they were, at a very early period, displaced to a considerable extent. Advancing from the northern parts of Asia and Europe, where they had enjoyed a wild independence, the Scythians or Goths drove the Cimbri or northern Celts before them, and, seizing upon that part of Gaul which is nearest to Britain, they crossed over into England. The period of this immigration is uncertain; but at the time of Cæsar's invasion, the primitive or Celtic inhabitants had been driven into the interior and more inaccessible parts of the island, while the south-eastern portion was peopled with colonies of Gothic descent, who may, therefore, be regarded as the chief ancestors of the English nation. The expulsion of the aboriginal population from the south-eastern coasts and lowland districts of the whole island was complete; so much so, in fact, that, but for the tenacity with which the names of natural objects adhere to them, and some other indications of a still fainter kind, not a trace or vestige of their original ascendancy would have remained. The Saxon conquest was of a different character. The invaders, considerable in number, sought political supremacy rather than a settlement by means of extermination, and used the privileges of conquest with more moderation than their predecessors of the same race. There no longer existed between the conquerors and the conquered that radical diversity of physical conformation, habits, and customs, which, in a barbarous age, is the source of inextinguishable hostility; they accordingly enslaved, but forbore from exterminating or utterly expelling the natives; a gradual amalgamation took place; and, from the commingled Gothic dialects of both, at length sprung the Anglo-Saxon, which is the parent of the English language. Some, indeed, have maintained that, at the period of Cæsar's invasion, the population of Britain still continued Celtic. But this opinion labours under serious objections. The Anglo-Saxon and the English language, in its elder and simpler form, exhibit scarcely a trace of Celtic in their composition; and they have even less of that peculiar dialect of Gothic which the Angles and Saxons must have spoken at the period of their arrival in Britain, than of the Belgic and Dutch dialects, which are in all probability of Scandinavian origin. To this it may, indeed, be objected that Druidism, which is rightly considered as a Celtic superstition, is mentioned by Cæsar in the earliest authentic records of the island which has reached our times. But, in the first place, Cæsar never speaks of having actually seen Druids, nor does it appear that any one of this class of priests was discovered until the Romans had penetrated into South Wales; and, secondly, forms of superstition often survive the races or nations amongst which they originated, and pass indifferently from the conquered to the conquerors, and conversely, by the operation of causes totally distinct from those which determine the fate of communities of men.

The expulsion of the Celts from the eastern coast of Britain long preceded the arrival of Cæsar. This may be inferred from the account of Tacitus, whose description

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¹ Mackintosh, *Hist. of England*, vol. i. p. 12.

² History, *ibid.*

of the inhabitants of the lowland parts of Scotland as a red-haired and large limbed race, clearly indicates their Gothic origin; whilst, in the interval between Cæsar and Agricola, no material change appears to have occurred in the relative distribution of the various tribes by whom Scotland was then inhabited. It would be vain to attempt to ascertain the epoch of a revolution which seems to have been effected long anterior to the period of history; but if the time of its occurrence be uncertain, the fact itself is nevertheless indisputable; and this is connected with another, sufficiently remarkable, namely, that every trace or vestige of the original Celtic population of the Lowlands has been obliterated, and that there is neither monument, record, tradition, nor circumstance of any kind which can lead to a conjecture as to their fate. It is natural, indeed, to suppose that in Scotland, as elsewhere, those who escaped the fury of the invaders sought shelter in the mountains or Highlands, where a people chiefly Celtic still exists; but it seems as well established as any fact of the kind can ever be, that the occupation of the Highlands by a Celtic population does not date much earlier than the sixth century, and that the first settlers of this race were a reflux of the Celts from Ireland, not a remnant of the aboriginal inhabitants of the Lowlands. The Dalriads or Attacotii are indeed said to have established themselves in Argyleshire about the middle of the third century; but they were driven back to Ireland in the fifth century, and did not return till the following one, when they effected a second and permanent settlement. Extravagant pretensions to antiquity have, it is true, been set up in favour of the Celtic Scots by Boyce, Buchanan, and others, who gravely affirm that this people reigned in Scotland a thousand years before the Christian era. But the fabulous millennium with which these writers gratified the credulous nationality of their countrymen in an uninquiring age has found no supporters in more modern times.

The condition of the Britons in the time of Cæsar very much resembled that of the Gauls from whom they sprung. They were divided into a number of petty kingdoms or states, each of which was again subdivided among subordinate chieftains, who governed their respective tribes or clans with more than feudal authority. On great emergencies, indeed, they united under a common leader; but this "king of kings" had only a limited and precarious rule; and the confederacies of the ancient Britons, like those of the ancient Greeks, were neither numerous nor lasting. Like the mutually repellant atoms of the Epicurean philosophy, their union was fortuitous; and as there existed no principle of compression to retain them in the situation into which accident or a sense of common danger sometimes threw them, a separation speedily followed. It was this which gave the Romans so great an advantage in their contests with these warlike nations. Never consulting together for the benefit of the whole, it was rare that even two or three of them united against the common enemy. They fought, for the most part, separately, and, as a necessary consequence, were beaten in detail. Of the limits of the regal authority among the Britons little is known with any degree of certainty, though much probably depended on the personal character of the individual who exercised it. Hereditary right seems to have been recognised, and extended even to female succession, but it was not strictly observed or enforced; and instances were not rare of the exclusion of a son by his father, whom he had offended, from any share in his dominions. It has been conjectured that the power of the people was considerable; but this is merely conjecture. Among the Gauls the few had not succeeded in excluding the many from all participation in the conduct of their own affairs. But whether the Britons resembled them in this respect or not, it

is difficult to say. From all that we learn, however, we are inclined to think that here the similarity failed.

But whatever may have been the power of the kings or the influence of the people, there existed an order which exercised an authority paramount to that of either, or of both united. This was the Druidical or sacred caste, which, in relation to the rest of society, occupied a station and enjoyed privileges in Britain, analogous to those possessed by the Brahmins of India at the period of their greatest glory. The power of the Druids was absolute, exclusive, and peculiar to them as a body. Their sanction was necessary to all public transactions, which otherwise were of no validity. They could pardon malefactors who had been judicially condemned, or ordain victims to the sacrifice without the intervention of any trial or judgment but their own. From the Druids the Romans seem to have borrowed the *aque et ignis interdictio*, which became the most terrible sentence of their law. It was, in fact, the Druidical excommunication slightly varied. An individual debarred from attending the holy rites, and interdicted the use of fire, received sentence of eternal banishment from the fellowship of his kind; and this sentence, more formidable than the excommunication of the Roman Catholic church in aftertimes, they could pronounce at pleasure. Their ceremonies were at once mysterious and inhuman. The mistletoe, which they accounted peculiarly sacred, was gathered by them from the leaves of the oak with circumstances of extraordinary solemnity, though for what purpose or with what view is unknown. They dwelt in the centre of concentrated woods, and their retreats were defended from intrusion or violation by the power of a dark and gloomy superstition. On their rude but horrid altars they sacrificed human victims; and from the course of the blood as it flowed under the knife of the officiating priest, they prognosticated future events. They were the lawgivers, physicians, poets, and philosophers of their country. They are said to have been acquainted with letters and the art of writing, though in what particular form is uncertain. Cæsar, probably from misinformation, says that they employed the Greek letters, which is very improbable. They taught their disciples the doctrine of transmigration, and inculcated on them the duty of despising death in defence of their country. They practised celibacy, and continued their order by kidnapping children, whom they trained up and initiated in their mysteries. Some of their observances are described as excessively revolting; others would seem to have been of a more innocent and even humane character. Britain was the great sanctuary of this superstition. Originally imported from Gaul, it seems to have found a congenial soil in this country, where it struck its roots so firmly, and insinuated itself so deeply, into the general character, that traces of it are still discoverable in several of the popular superstitions which the "schoolmaster" has not yet succeeded in effacing.

The Druidical system is not without oriental features. "So much subserviency of one part of a nation to another," says Sir James Mackintosh, "in an age so destitute of the means of influence and of the habits of obedience, is not without resemblance to that system of ancient Asia, which confined men to hereditary occupations, and consequently vested in the sacerdotal caste a power founded in the exclusive possession of knowledge. The Egyptian and Phœnician colonists who settled in the Hellenic territory were, by some fortunate accident unknown to history, set free from those Asiatic restrictions which, having probably long subsisted as usages, were at length sanctioned among their ancestors by law and by religion as the sole security against a relapse into unskilfulness and barbarism." But the Celtic colonists who originally settled in Gaul and

British and Roman Period. Britain were not equally fortunate. Having imported, long before the period of record, the oriental system, with its restrictive and stationary spirit, they submitted to its yoke in their new settlements, where it withstood the example of a more generous polity afforded by the neighbouring republics of Hellenic origin, and only yielded at length to the ascendancy of the benignant genius of the Christian religion.

The prevalence of such a system is, even under the most favourable circumstances, incompatible with an advanced state of civilization; and in Britain it co-existed with a condition of society which, anterior to the Roman occupation, was but little elevated above absolute barbarism. The south-western shores of the island had, it is true, been early resorted to by foreigners for purposes of traffic; the Phœnicians and Massilians, for example, traded in the tin of Cornwall, and from them geographers spoke of the Cassiterides or Tin Islands; but this traffic was too limited in extent, and too confined in its sphere, to have any material influence on the general character of the people, who accordingly derived small benefit from their occasional intercourse with foreigners. Their scanty clothing consisted of untanned skins; and the parts of the body left exposed were bedaubed with an azure colouring matter extracted from a particular herb. Tillage, which had been introduced by the Belgic Gauls, was not altogether unknown; but the principal articles of food were the milk and flesh of their herds. Superstition, with its usual blind absurdity, had forbidden them the use of fish, which abounded on all the coasts of the island. Their towns were merely clusters of wigwams, covered with turf, boughs, or skins, and situated in the midst of some forest or morass, with the avenues defended by ramparts of earth and felled trees. In their persons they were large and tall, excelling the Gauls alike in stature and in strength; but their features were heavy, their figures clumsy, and, according to Strabo, they did not stand firm on their legs. Large men, indeed, are seldom handsome or elegantly formed. But although barbarians in point of art and industry, the ancient Britons commanded respect by their intellectual and moral qualities. According to Tacitus, they possessed a quicker apprehension than the Gauls; and Diodorus Siculus commends their integrity as greater than that of the Romans. A custom abhorrent to natural morality is indeed said to have prevailed amongst them; we are told that societies of ten or twelve persons possessed wives in common. But the supposition of such a custom might be easily, though erroneously, formed, by a Roman stranger, from the circumstance of the barbarians sleeping promiscuously in their hovels, as the peasantry do to this day in some parts of Scotland; and the fact, when rightly understood, by no means warrants the conclusion which seems to have been drawn from it. On the contrary, the chastity of the sexes, and the purity of domestic intercourse, may have been as rigidly observed and maintained among these simple barbarians as in periods of society when the guards of virtue are multiplied, and modesty is sheltered by factitious sentiment and conventional ceremony.

The trade in tin of Cornwall, carried on either directly or indirectly by the Phœnicians and Massilians, has been already noticed. Prior to the Roman conquest, however, the exports must have been inconsiderable; and it is even doubtful whether those early navigators were acquainted with the mainland of Britain, since we hear only of the Cassiterides, or adjacent islands, to which their mercantile adventures appear to have been confined. But after the Romans had firmly established themselves in their conquest, copper, tin, lime, chalk, pearls, corn, cattle, hides, horses, cheese, dogs, and slaves, began to be exported by

them, and we may conclude that the products of other countries were imported in return or exchange for these commodities. The only manufacture we read of was that of baskets, in which, as we learn from various authorities, the Britons greatly excelled. Some of the more useful but baser metals seem not to have been found in Britain before the time of Cæsar, who informs us that even their brass was imported; and their skill in manufacturing such as they had must have been very small indeed, since, as we learn from the same authority, their ornamental trinkets were supplied by strangers. But their warlike habits had not left them ignorant of the coarser craft of the armourer. Man has never been found, in any state or condition of his existence, altogether unprovided with weapons of defence. Those of the Britons consisted of small targets and swords, spears, and chariots armed with iron scythes projecting from the extremities of the axle-tree; and they were also provided with noisy rattles, intended to strike terror into their enemies. Their chariots they managed with considerable dexterity, and, on several occasions, succeeded in breaking the Roman line by means of these vehicles; but, on the whole, they proved unavailing against the admirable discipline of the legions, and were no more heard of after the Romans gained a footing in the island. It is even wonderful that they should ever, in any instance, have been found in the least degree dangerous or formidable, except to the Britons themselves; for as these vehicles could only act on level unbroken ground, and as the extreme mobility of the legion gave it the choice of its own position, whether for attack or defence, nothing but the grossest misconduct on the part of its commander could ever have placed it in a situation to be successfully assaulted by such clumsy and unmanageable engines.

Such are the principal notices supplied by historians respecting the ancient inhabitants of this country prior to the Roman conquest. The first events in the authentic history of Britain are the landing of Cæsar on the southern shores, in the fifty-fifth year before the Christian era, and his invasion of the country in the following year. The course of his conquests in Gaul had brought him in sight of an island hitherto known only by name, and, being probably desirous of dazzling the people of Rome by a new achievement, as well as of seeming to be engaged in objects remote from internal aggrandizement, he resolved on attempting a descent upon this unexplored region, on the pretence that the Britons had rendered some assistance to the Gauls in their struggle for independence. Another and more secret motive for this expedition may have been, that it would enable him to prolong his provincial command, and, above all, to keep up an army devoted to its chief, until the fulness of time should come for the execution of his projects against liberty. On the first occasion, when he disembarked near Deal, his landing was warmly disputed by the natives; but discipline and skill at length prevailed over wild valour, and after a sanguinary struggle the Britons were defeated, and forced to sue for peace. Deputies were accordingly sent to lay their submission before Cæsar, and learn the conditions on which they were to be forgiven for the crime of defending their native soil. But having ascertained the number of the invaders, and learnt that accidents arising from ignorance of the navigation had damaged the Roman fleet, they acceded to whatever terms Cæsar thought proper to dictate, and secretly resolved to renew the attack. They were again repulsed, however, though not without inflicting a severe loss on the enemy; and Cæsar, surprised at the resistance he had encountered, as well as anxious to secure his return to Gaul, which the approach of winter had endangered, readily accepted the nominal submission proffered by the islanders. Thus ended the first descent of the Romans

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on Britain. After a brief but fierce struggle of little more than three weeks, Cæsar embarked his whole army, and returned to Gaul, glad to escape from a situation where his means were insufficient to enable him to keep his ground, and where the slightest reverse would undoubtedly have proved fatal.

In the ensuing spring the same commander again appeared on the British coast, with an armament of 800 vessels, having on board five legions and 2000 auxiliary horse. The sight of so formidable a fleet made the Britons despair of resisting the landing of the invaders, and they accordingly withdrew to their forests, where they could act with better chance of success. The Romans, therefore, disembarked without opposition, penetrated into the country, and passing the Thames above Kingston, entered the country of the Trinobantes, whose territory included the site of the present metropolis of Britain. The advance was bravely disputed, and in the course of this forest campaign, the military qualities of the invaders were put to a severe trial, by the incessant activity, the daring courage, and the rapid movements of the hardy natives. Cassivelaunus, a British chief, particularly distinguished himself by his gallantry and enterprise, as well as by a natural talent for war, which was strikingly exhibited in the bold design of cutting off Cæsar from his fleet. But genius and science asserted their usual superiority. The Britons were at length vanquished; and the chiefs having promised to pay tribute, and to abstain from hostility against those of their countrymen who had abetted the Romans, the latter withdrew, content with the barren glory of having gained a victory without result, and conquered a country which they could not retain. In fact, it is not easy to divine the real object of these expeditions. It has been said that Cæsar showed no signs of an intention to establish himself in Britain, and probably regarded his expeditions only as a means of flattering the Romans, and of displaying the complete reduction of Gaul. This may be true; but it was never the character of Roman policy to fight useless battles, or lavish unprofitably the blood of the legions. The more probable supposition appears to be, that Cæsar considered the entire conquest and subjugation of a country covered with forests, without roads, and inhabited by a hardy, warlike race, as a hopeless task, or at least as one which, in his particular situation, and with the means at his disposal, it would be unwise or imprudent to persevere in. One benefit, however, resulted from his enterprise; he first laid open the country to history, and collected those invaluable notices of the character, condition, habits, manners, customs, and religion of the people, which he has preserved in his Commentaries, and which still afford instruction and delight to every reader.

Britain was threatened with invasion by Augustus, who thereby extorted presents and tribute from the insular chiefs; Tiberius employed no menace, but exacted the tribute; and Caligula, in one of his insane freaks, landed at the head of a body of troops, whom he commanded to charge the ocean, and collect cockle-shells as fit emblems of his imaginary triumph over that boisterous enemy. The visit of the imperial madman took place ninety years after Cæsar's expedition, and formed a subject of derision to the whole Roman world. But the next attempt was of a more serious character, and productive of graver results. In the reign of Claudius, the adventurous and hitherto unprofitable enterprise was resumed under two distinguished officers, Aulus Plautius and Vespasian, who, landing at the head of an army 50,000 strong, marched through the territories of the Cattivelauni, and defeated Caratacus and Trocodumnus, the British leaders, in three successive engagements. But the retreating enemy was still

too formidable to be seriously passed; reinforcements were demanded by the emperor's lieutenants; and seven years elapsed before they succeeded in reducing the country southward of the Thames. This partial conquest cost the blood of thirty battles, in which the Romans were not always victorious.

Ostorius Scapula, who succeeded Aulus Plautius in the provincial government of Britain, extended the province to the banks of the Severn, and built a chain of forts to check the incursions of the independent tribes. But Caradoc or Caractæus still lived. This renowned chief had lost his dominions; but, notwithstanding all his reverses, the ascendancy he had acquired over the minds of his countrymen remained unshaken, and, great in adversity, he was still formidable. Despairing of success in the open country, he transferred the war to the mountains of Wales, and at the head of the Silures and other tribes, who had arms in their hands and the love of liberty in their hearts, he prepared to make another effort in defence of his country. The position he selected for this final stand shows him to have been possessed of that instinctive military genius which anticipates science and often defeats its combinations. It consisted of a rising ground or eminence, with a rapid and scarcely fordable river, which it commanded in front, and was incapable of being turned by either flank, whilst its defensive strength was increased by a stone rampart built along the brow of the hill. Here he resolved to await the attack of the Romans; and exhorting his followers to remember that Cæsar himself had been driven from the shores of Britain, he called upon them to maintain by their valour the liberty which they had inherited from their ancestors. They vowed fidelity to the cause of their country, and promised that they would conquer or die where they stood. The Roman general was astonished. He saw that he had to encounter a desperate enemy, skilfully posted, and unassailable except where his position was strongest; and, in viewing the difficulties of his situation, his mind almost misgave him. But the spirit of his soldiers was roused, and they cried out that no position was impregnable to the brave. Having forded the river with extreme difficulty, they formed the *testudo*, or close column, covered overhead with their shields, to protect them from the missile weapons of the natives; ascended the hill in this compact order; broke through the rampart of loose stones; and charging home upon the Britons, overthrew them with great slaughter. The brothers of the British prince surrendered; his wife and daughter were made captive; and the hero himself, who had escaped the casualties of the field, and taken refuge among the Brigantes in Yorkshire, was afterwards basely betrayed into the hands of the enemy by their queen Cartismandua, his inhuman stepmother. He was sent captive to Italy, whither the fame of his achievements had preceded him; and the people flocked to behold the man who for nine years had defied the power of Rome. His family supplicated for mercy; but the magnanimous chief, sustaining in misfortune true greatness of character, stooped not to prefer any solicitation, and, addressing the emperor with a manly dignity, equally removed from abject submission and insolent defiance, made so great an impression on the mind of Claudius, that his fetters were ordered to be struck off, and both his family and himself treated with the most distinguished regard.

Meanwhile the Silures, beaten but not subdued, renewed their attacks on the Romans, and kept up the animosity of their countrymen by their example. They cut to pieces some cohorts employed in building forts in their country; harassed the enemy with continual skirmishes; and, although defeated in a general action which they afterwards risked, they escaped without entire rout under

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cover of night. Weary of an obscure and destructive warfare, barren of glory and productive of little save fatigue and anxiety, Ostorius died, and was succeeded by Aulus Didius. The latter checked the incursions of the Britons, who had again become formidable under a new leader; but not till after they had defeated a Roman legion, and reaped some other advantages of a minor description. Unfortunately for himself, however, Venusius, the leader in question, and chief of the Huicci of Warwick and Worcestershire, had married the betrayer of Caracatus, a woman as licentious in her personal conduct as she had proved herself devoid of principle or patriotism. Having scandalized her subjects by admitting Villocatus, her armour-bearer, to a share of her bed and throne, Cartismandua implored the aid of the Romans against her husband, who had collected a force to expel the usurper. But the promised assistance proved too scanty for the protection of the adulteress, who, in the end, was driven from her kingdom; and although this civil war operated as a seasonable diversion, the efforts of the Romans were for several years confined to the preservation of what they had already acquired.

But the season for action in due time arrived. Suetonius Paulinus, an officer of high reputation, but ambitious, and prone to cruelty, having obtained the province of Britain, resolved to destroy the sacred seat of Druidism in the island of Mona or Anglesea, where the head of that order resided, considering it as the centre of the British nation, and the source whence emanated that spirit of resistance which had already cost the Romans so much blood. The project was equally bold and well conceived. Having crossed the strait, however, he found a host drawn up in order of battle to receive him, the declivities bristling with arms, soldiers occupying every defile, and women, in funeral apparel, running along the ranks like furies with burning torches in their hands, whilst Druids clustered around, imprecating the wrath of heaven on the sacrilegious intruders into their holy of holies. Awed by the spectacle, the legions for a moment stood powerless; but ashamed of their momentary panic, they rushed forward to the attack, drove all before them, and, after demolishing the altars and groves, burned the Druids in their own fires.

In the midst of this havoc, however, Suetonius received intelligence of a general insurrection of the conquered tribes. The immediate causes of an outbreking so little expected were the gross injustice done to the family of Prasutagus, king of the Iceni, and the atrocious outrages offered to his queen Boadicea, who, having remonstrated against the fraudulent exheredation of her children, was publicly whipped, and constrained to witness the violation of her daughters. Wrongs so great, and insults so intolerable, required not the general spoliation which followed to kindle up the spirit of an indignant people, and to turn their vengeance on the oppressors. The standard of the injured queen was raised, and numerous tribes rallied round it. The infant colony of Camelodunum (Malden or Colchester) was destroyed; the infantry of the ninth legion were annihilated; and in the more flourishing colony of Verulamium (St Alban's) seventy thousand persons are said to have been put to death with all the cruelties of a barbarous revenge. Suetonius flew to the assistance of his countrymen, and soon succeeded in bringing the Britons to a general action on open ground, where their superiority in point of numbers was of little avail against discipline and science. They were defeated with prodigious slaughter, whilst the victors, by their own account, lost only five hundred men. The disproportion was doubtless

great; but this is probably an exaggeration in both directions. The Britons seem to have fought gallantly, though not successfully; and hence the historian says, that "the glory won on that day was equal to that of the most renowned victories of the ancient Romans," a statement inconsistent with the notion that it had been either easily or cheaply purchased. Boadicea ended her miseries by taking poison; and Posthumus, the commander of a legion, fell on his sword, indignant at not having a share in so glorious a victory.¹

Broken by this blow, the spirit of the Britons would have soon been quenched had it not been kept alive by oppression. Suetonius, with all his abilities, was injudiciously vindictive, and frequently lost by his cruelty the advantages which he had gained by his talents. He was therefore recalled by Nero; and, under his more immediate successors, the Britons enjoyed a short interval of repose. But the Roman energies revived under Vespasian, who had gathered his first laurels in Britain. The Brigantes, commanded by Venusius, were at length overcome; and the Silures, after a gallant but hopeless resistance, were in like manner subdued. In this double contest Cerealis and Frontinus employed no less than seven years, a fact which sufficiently indicates the persevering energy with which these powerful tribes contended for independence.

These successes paved the way for the subjugation of the greater part of the island under Cnæus Julius Agricola, who was now appointed to the government of the province. The administration of this distinguished Roman would probably have been as little known to us as that of any of his predecessors, if it had not been for the circumstance of having as his son-in-law the most able and philosophical of the ancient historians; "a singular instance," as Sir James Mackintosh observes, "of the power which genius, in ages where historical materials are scanty, may exercise over the allotment of fame." In the character of Agricola is exhibited an example of the union of great capacity for war, with prudence, moderation, and judgment in the administration of civil affairs. "His well-balanced mind," says the very eminent writer just cited, "was averse from all excess, but it was without those brilliant peculiarities in which the biographer delights. The only general maxim by which the historian attempts to exalt his character is, that there is a conduct, even under tyrannical reigns, equally distant from servility and turbulence, by which an eminent man may serve his country with safety and innocence. The work in question ought rather to be regarded as the funeral panegyric than as the life of Agricola. The age of Tacitus afforded him few opportunities to acquire a talent for praise by frequent exercise: his style did not easily descend to ordinary particulars; and his affection in this case cramped his freedom." Hence the indistinctness of the outline presented to us by the historian may be ascribed both to the generality of his language and to the limits of his information; circumstances often render it difficult to extract a precise meaning from his words, and, particularly, to fix the localities of some of the most interesting events he relates.

Agricola began his military career in Britain by subduing the Ordovici of North Wales, and reducing Mona, which, after the fierce vigour of Suetonius was withdrawn in consequence of the insurrection under Boadicea, had regained its independence and religious pre-eminence as the grand seat of Druidism. This he effected without the aid of ships, by causing a sufficient force to swim across the narrowest part of the strait with their arms and horses, but unencumbered with baggage. In his second campaign

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¹ Mackintosh, *History*, vol. i. p. 22.

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he carried his arms to the northward, and subdued tribes who had never as yet come into contact with the Romans; showing clemency to such as submitted to the power of Rome, and never, in any instance, abusing victory for purposes of cruelty or oppression. To secure these advanced conquests, he built a chain of forts or military stations from sea to sea, in nearly the same line where the rampart of Hadrian and the wall of Severus were afterwards erected.

In his third campaign Agricola entered the country of the Caledonians by the head of the Solway, and traversed it as far as the Tay without encountering an enemy. Believing that the invaders would retire on the approach of winter, they abstained from committing any hostilities; but in this expectation they were deceived, for, when winter set in, they found the Romans established in fortified towns, well provided with all necessary stores, and secure alike against surprise or assault. Next year the Roman general built a line of forts between the friths of Forth and Clyde, with the double view of excluding the contagion of revolt, and of protecting the inhabitants of the province against the inroads of the northern barbarians. In his fifth campaign he crossed the frith of Clyde; and, after a variety of skirmishes with the wild natives of Cantyre, Lorn, Argyleshire, and Lochaber, obtained a view of the coast of Ireland, which, from the information he collected as to the force necessary for subduing and retaining, he meditated adding to the Roman empire; but this design was never put in execution. During his sixth campaign he passed the friths of Forth and Tay, and led his army, which was attended and supported in all its movements by a fleet, along the eastern coast of Scotland. The Caledonians hung upon his line of march, and harassed him considerably; but, awed by the presence and sight of the fleet, which was to them a novel spectacle, they generally kept at a respectful distance. In a night attack, however, they threw a portion of his army into confusion; and, having penetrated into the camp of the ninth legion, would have overwhelmed them entirely if Agricola had not come with great celerity to their aid, and driven the assailants back to their woods and morasses. After this action, Agricola retired into winter quarters, and left the Caledonians a short respite to prepare for the final struggle in defence of their rude independence.

When the Roman commander took the field in his seventh campaign, he found the native host encamped in a position the exact locality of which has been much disputed (some fixing it at the base of the central and others at that of the eastern portion of the Grampian chain), under a chief whose name has been latinized into Galgæus. The barbarians were estimated at near 30,000 men, whilst the Roman army was little, if at all, inferior in number. But every possible advantage was on the side of the latter; for with what conceivable chance of success could a disorderly mass or rabble of 30,000 barbarians contend against an equal number of highly-disciplined and veteran troops, led on by a general of consummate ability and great experience in the art of war? The elaborate description of Tacitus has caused an importance to be attached to this battle, which, in reality, does not belong to it. The issue was never even for an instant doubtful. The Caledonians were defeated with great slaughter, ten thousand having fallen either in the battle or in the pursuit, whilst the loss of the Romans scarcely exceeded three hundred men. After the defeat of their main body, a reserve of the Caledonians moved to take the Romans in flank; but the attempt was defeated by Agricola in person at the head of a strong body of legionaries, and the flight then became universal. The inhabitants mingled with the fugitives after setting fire to their dwellings, and the silence of de-

solation succeeded to the noise of conflict. The pursuit was soon discontinued; the vanquished found refuge in their mountain fastnesses; and as the Grampian range which towered in front constituted the advanced bulwark of a country wholly unknown, Agricola did not attempt to penetrate into its dangerous defiles, but, marching into the country now called Angus, took it from the Horesti, whom he had previously subdued. Meanwhile his fleet returned from a voyage of discovery which it had prosecuted as far as the Orkades, and even Thule, supposed to be Foula, the most northerly of the Zetland islands; and Agricola established his winter quarters on the most level district, which lay to the northward of the natural frontier formed by the two friths. But in the reign of Domitian it was difficult for the most prudent general to be long successful with safety. Agricola was recalled; and, on his return to Rome, all the arts by which he shunned popularity proved insufficient to lull the suspicions of a jealous tyrant, by whose directions his days seem to have been shortened by poison.

Under Agricola the Roman dominion reached its utmost extent in Britain, and the natives, as we have seen, were driven into the rugged and inhospitable regions beyond the Grampians. From this time till the close of the third century the island is seldom noticed by the Roman historians. We know, indeed, though chiefly by the evidence of medals, that the mountaineers broke into the Roman province, and were driven back into their fastnesses by the vigorous arm of Hadrian, who erected a second wall, the remains of which are still traceable from the Solway Frith to the mouth of the Tyne. Under Antoninus the same species of fortification was constructed on the more northern frontier of the friths; while Severus, abandoning Agricola's rampart, which Antoninus had caused to be repaired, erected a stone wall almost parallel with that of Hadrian already mentioned, and in a manner equally solid and durable. These frontier works, executed on so large a scale, and requiring a numerous body of troops at the different stations for their defence, sufficiently attest the persevering and formidable character of the assaults of our rude ancestors on the Roman power in Britain. They might be beaten, but they could not be subdued; they might be driven back, but in a little time they were sure to return to the attack. The progress of the Roman arms in the reduction of Britain was singularly slow; and, notwithstanding all their defensive precautions, the tenure by which the northern part of the province was held seems to have been exceedingly insecure. Gaul was conquered by one great effort, and retained in subjection without difficulty. Britain, on the other hand, though peopled by a race of kindred origin, was only carried as it were foot by foot, and kept under by the direct ascendancy of military power. And this difference produced another, which, in its results, often influenced the destinies of the Roman world. Its insular situation, and the large force which it was necessary to maintain for the support of order and government, offered irresistible temptations to irregular ambition; it became "an island fertile in usurpers;" and the commander who assumed the purple had always at hand powerful means to enforce his pretensions. It was alike the object and the theatre of all manner of intrigues and contentions; the first, though not the highest, prize in the lottery of ambition. Hence the Roman cultivation was extended to it in a much less degree than to Spain and Gaul. The writers of the latter province were respectable, those of the former the most celebrated of the time; but Roman Britain did not produce a single literary name. In what degree the prevalence of the Latin might have paved the way for that disappearance of the ancient language of Britain in the lar-

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ger and more fertile portion of the island, which was completed under the Saxons, there are no memorials extant which warrant us to hazard a conjecture. The Roman remains seem rather to indicate the luxury of the military stations of that people, than a desire to adorn their province with civil architecture; whilst, in the convenience and magnificence of their roads, they only contemplated the security of their power or the extension of their conquests.

The precise period of the introduction of Christianity into Britain is uncertain. About the end of the second century, however, we find Tertullian boasting that the gospel had subdued tribes yet unconquered by the Romans; and from this circumstance, as well as from our more accurate information respecting the diffusion of Christianity in Gaul, it may be reasonably supposed that its first planting in our island was considerably earlier. Two centuries afterwards, theological controversy had become so prevalent, that Pelagius and Celestius, the one a Welchman and the other a Scotchman, agitated all Christendom by their heretical notions on the subjects of original sin and free will. The received opinion, which ascribes to Constantine, who began his reign at York, the introduction of Christianity into Britain towards the middle of the fourth century, is founded upon the palpable error of confounding the first preaching of the gospel with the formal recognition or establishment of Christianity, upon the ruins of Paganism, as the religion of the empire. Long before that time intrepid and dauntless missionaries had carried the faith of the cross to the hearths and the homes of our barbarous ancestors; and the policy of Constantine only kept pace with, instead of outrunning, the natural course of events.

When Severus died at York, Caracalla, then known by his original name of Bassianus, concluded a peace with the Caledonians, and, along with his brother Geta, hastened to Rome to plunge into all the debaucheries of the capital. There now occurs in the history of Britain a chasm of seventy years, during which the silence of the Roman writers would lead us to infer that the island enjoyed peace. In the reign of Diocletian, Carnusius, intrusted with the command of a naval armament, fitted out to repress piracy on the coasts of Britain, usurped the purple, and maintained his assumed dignity for eight years. But while Constantius, the coadjutor of the emperor, was preparing to attack him, he was assassinated by Allectus, who, imitating the example of his master, usurped the sovereignty, and maintained it for three years. He was, however, defeated and slain by Constantius, who put an end to the rebellion, and dispersed the followers of the usurper. In the division of the empire between Galerius and Constantius, Britain fell to the share of the latter, who, in consequence, fixed his residence in the island, and, after some contests with the Caledonians, of which little is known, died at York, leaving his son Constantine his successor in the empire. This prince, not unjustly surnamed the Great, assumed the purple at York, where he staid some time to pay the last honours to his father's ashes, and to finish the war with the Mcætæ and Caledonians, who at this time began to be known by the names of Picts and Scots. Called afterwards to a higher destiny, and recognized as the undisputed master of the Roman world, he overthrew the altars of Paganism, and established Christianity as the religion of the empire, including that portion of it where he had first been invested with the ensigns of the imperial dignity. About eighteen years after the accession of Constantine, Britain took part with the unsuccessful usurper Magnentius. This entailed on it the bitter resentment of Constantius, who sent into the island one Paulus, a Spaniard, with instructions to discover and punish those who had been concerned in the rebellion. Tyranny is not al-

ways so fortunate as so be provided with such instruments. This inquisitor, surnamed Catena, from his expertness in connecting criminal charges, entered at once on his career, and soon filled all the western parts with tortures, confiscations, and murders. Martinus, the British governor, unable to restrain his cruelities, attempted his life, but unhappily missing the aim, was obliged to pay the forfeit of his own. On the accession of Julian to the purple, that event was signalized by an act of exemplary justice; the inhuman Paulus was ordered to be burned alive.

A few words may be necessary here respecting the constitution of the provincial government of Britain. This was generally intrusted to a prefect, who exercised the civil and military power, subject only to the control of the questors, whose peculiar department was finance. The prefect acted as imperial lieutenant or viceroy, and appointed the governors of the six provinces into which Roman Britain was divided. These were, first, Britain to the south of the Severn and the Thames; second, Britain along the Severn, including Wales and the adjoining districts; third, Flavia Cæsariensis, from the two former provinces to the German Ocean, the Humber, and the Don; fourth, Maxima Cæsariensis to the north of the Humber, from its mouth, as far as the mouths of the Tyne and the Eden; fifth, Valencia, from the Tyne to the Clyde and the Forth; and, sixth, Vespasiana, the country beyond the friths, a precarious and ill-defined conquest, continually disturbed by the inroads of the barbarians. Such were the territorial divisions of this country under the Romans. They seem to have been adopted gradually as conquest extended, and afterwards rounded off by natural limits for the convenience alike of the general and of the local government.

For about a century and a half the southern part of the Roman province in Britain had suffered but little disturbance from the northern tribes, whose inroads were generally checked by the frontier defences and garrisons. About ten years, however, after the judicial campaign of Paulus, the Scots and Picts, recovering from the chastisement inflicted on them by the commanders of Julian, attacked with greater force the legions of Valentinian and Valens, and for three years ravaged the province with impunity. They were at length driven back by Theodosius, governor of Britain, and father of the celebrated emperor of that name, who defeated them in several battles, and forcing them beyond the rampart of Agricola, once more extended the province to its utmost ancient limits. But the progressive decline of the empire having exposed its northern frontier to invasion at every point, the Roman troops were gradually withdrawn from this island for the more urgent purpose of protecting the seat of dominion; and about the middle of the fifth century Britain was abandoned to her own resources. Gallio of Ravenna commanded the last detachment of troops that Rome ever sent to this island. This was under Honorius. After repelling a furious inroad of the Scots and Picts, the Roman general, assembling the British chiefs, told them frankly, that, since the empire, labouring under its own weight, could no longer afford them protection, they must henceforth take courage and defend themselves; and, in the name of the emperor, he formally absolved the different cities or townships of the province from their allegiance to Rome. Lastly, having repaired the wall of Severus, erected useful forts, and supplied the natives with military weapons and engines, the Romans took their final departure from Britain exactly four hundred and seventy-five years after Julius Cæsar first landed on its shores.

These bequests, however, proved unavailing. The British youth who had been trained in the Roman army more than once drove back the barbarous tribes of their own

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island; but the latter increasing in numbers and audacity, at length "broke through their walls, like wolves into a sheep-fold, retired with their booty, and returned every succeeding year." In their distress they made a vain appeal to Ætius, who for a moment propped the falling empire. "The barbarians," said they in a letter entitled the *Groans of the Britons*, "drive us into the sea, and the sea drives us back upon the swords of the barbarians." But Ætius had to do with Attila, and, however much he might pity the suppliants, he could afford them no relief. Disappointed of aid in this quarter, and despairing of their ability any longer to resist their northern invaders, the British states were led to employ in their defence auxiliaries who soon became more formidable than the enemies against whom they had been called in to combat. These mercenaries, who gradually rose to be conquerors, consisted chiefly of Saxons, intermingled with Angles, Jutes, and Frisians from the Cimbric Chersonesus, or peninsula of Jutland. The Saxons, who appear to have had their chief seat on the Elbe, were previously known to the Britons only by predatory descents on their coasts; and, certainly, it does seem rather extraordinary that they should have thought of calling in the aid of such perilous auxiliaries. But, under the pressure of urgent danger or actual calamity, men are more inclined to seek present relief than to calculate remote consequences; and it should be recollected that the Britons, denied all assistance by their former masters, and wholly unable to defend themselves against the desolating inroads of the fierce tribes of the north, were in a situation to close with any scheme which promised even a chance of deliverance. That the invitation given to this marauding race was as formal as it afterwards proved fatal to the native population, may safely be doubted, notwithstanding the direct testimony of the Saxon historians. They were probably at hand, and being always ready to embark in any enterprise which held out a prospect of booty, they in all likelihood required but little solicitation to induce them to join the Britons against their northern enemies. Accordingly, in the middle of the fifth century, the Saxon ships arrived on the British coast, where they disembarked a few hundred wild warriors of that roving nation under their leaders Hengist and Horsa. These fabled descendants of Oden immediately took the field at the head of their followers, and by their aid the Picts and Scots were completely defeated. One evil was thus averted, but another, and, if possible, a greater, succeeded. The Saxons, acquiring a liking for the country they had been hired to defend, and eager to exchange the bleak shores and sandy wastes of the north for the rich fields and more genial climate of Britain, invited fresh bodies of their countrymen to join them, and, in a little time, from being the auxiliaries, they became the conquerors and masters, of the ill-fated Britons. But the latter did not yield without a struggle. Displaying, when it was too late, a valour which, more opportunely exerted, would have spared them the miseries of this contest, they resisted their new tyrants, and occasionally with success. Horsa fell in battle; and so slow was the progress of the Saxon arms, that Hengist, with all his boasted victories, never penetrated beyond the county of Kent. The invaders, however, clung with desperate tenacity to the soil. By degrees the Saxon power reduced the natives to entire submission, or drove them to seek shelter in the mountains of Wales, Cornwall, and Cumberland. Many emigrated to avoid the horrors of this conquest; and some settling in Armorica, the peninsula between the Seine and the Loire, laid the foundation of that singular resemblance in language and manners to the insular Britons which has ever since distinguished the inhabitants of Bretagne. For the history of England from this period until

the union of the crowns, we refer to the article ENGLAND. See also the article SCOTLAND. Reign of James I.

CHAP. II.

REIGN OF JAMES I.

Accession of James to the English throne.—State of the nation at this time.—Origin of the patriotic party.—Grievances of the nation.—James's arbitrary system of government.—Puritans.—Attempt to establish Episcopacy in Scotland.—Iniquity and folly of the project.—First Parliament.—Peace with Spain.—Proposed union with Scotland.—Difference between the King and the Parliament.—New Parliament convoked.—Execution of Sir Walter Raleigh.—Gunpowder Plot.—Policy in regard to Ireland.—Death of Henry Prince of Wales.—Affairs of the Palatinate.—Spanish match proposed.—Remonstrance of the Commons, and dispute consequent thereon.—Marriage with the Infanta resolved on.—Prince Charles sets out for Madrid.—His reception there.—Articles of the Marriage treaty.—Faithlessness of the Prince.—Marriage with the Infanta broken off.—New match proposed with Henrietta of France.—War declared against Spain.—Affairs on the Continent.—Death and character of James.

The history of Britain as one kingdom commences with the union of the crowns in the beginning of the seventeenth century. In 1603 the kingdoms of Scotland and England fell under the dominion of one sovereign, by the accession of James VI. of Scotland to the English throne. He derived his title to the latter from being the great-grandson of Margaret, eldest daughter of Henry VII.; and, on the failure of the male line, his hereditary right remained incontestible. Queen Elizabeth, with her last breath, had recognised him for her successor; and the parliament, conformably to her dying request, had settled the succession on the heirs of Henry VII.; so that few sovereigns ever ascended a throne with more general approbation, or greater hopes of a peaceable and happy reign. The memory of a disputed succession was yet fresh in the minds of the English; and as the title of James was unquestionable, the accession of a protestant sovereign, who was to extinguish the hostility of Scotland, and unite two kingdoms intended by nature to form one, was regarded as a new and auspicious era in the history of both countries.

But the popularity of James hardly survived his arrival in England; the hopes which had been so eagerly cherished were soon blighted; and the history of this monarch's reign consists of little else than a detail of disputes and contentions between him and his parliament. A minute account of these transactions would scarcely conduce either to entertainment or instruction; but it is nevertheless of importance to know their origin, as out of them sprung those succeeding events which make so conspicuous a figure in the annals of Britain.

In the ages which preceded the period upon which we are now entering, the human mind, enervated by superstition, and degraded by ignorance, seemed to have surrendered all pretensions to liberty, either religious or civil. Unlimited and uncontrolled despotism everywhere prevailed; and although England suffered less in this respect than almost any other nation, the numerous examples of arbitrary power exercised by her sovereigns show that the country was then very far indeed from enjoying liberty in any rational sense of the term. As a proof of this, and as an evidence how little restraint was at that time imposed on the authority of the sovereign, it is only necessary to mention, that the proceedings of parliament were accounted of so little consequence, that no journals were kept of them; nor was it till 1607, four years subsequent to the accession of James, that parliamentary journals were commenced, on the motion of Sir Edwin Sandys, a member of great authority in the house.

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But towards the end of the sixteenth and beginning of the seventeenth century, a great though insensible revolution took place throughout all Europe. Arts and sciences began to flourish; commerce and navigation were greatly extended; and learning of all kinds began to be diffused. More enlarged views naturally gave birth to generous sentiments; a love of freedom, in England especially, was implanted in the breasts of most people of birth and education; and this was greatly promoted by an acquaintance with the ancient Greek and Latin writers. The example of the republics of Greece and Rome, the members of which had so often sacrificed their lives in defence of liberty, produced a powerful impression; and a desire of circumscribing the excessive prerogative and arbitrary proceedings of the crown began to be secretly formed throughout the nation.

Nor was this desire unreasonable, or without a solid foundation. During the last years of Queen Elizabeth's reign, the commerce, navigation, and number of seamen in England, had sensibly decayed. A remonstrance from the Trinity-house in 1602 bears, that since 1588, the number of seamen and shipping had decayed about a third. Every species of domestic industry was fettered by monopolies, and exclusive companies, which are only another species of monopoly; almost all foreign trade, except that to France, was in the hands of a few; and any prospect of future improvement in commerce was for ever sacrificed to the temporary advantage of the sovereign. These companies, though arbitrarily erected, had carried their privileges so far, that almost all the commerce of England centred in London; the customs of that port alone amounted to L.110,000 a year, whilst those of the rest of the kingdom amounted only to L.17,000; and the whole trade of London itself was confined to about two hundred citizens, who, by combining together, were easily enabled to fix whatever price they pleased both on the exports and imports of the nation. Besides this, the subjects were burdened by wardships and purveyances. The latter constituted an old prerogative of the crown, by which the officers of the household were empowered to take, without consent of the owners, provisions for the king's family, and carts and horses for the removal of his baggage, upon paying a stated price for them. The king had also a power of sending any person, without his own consent, on whatsoever message he pleased; and thus he could easily compel an individual to pay any sum of money he chose, rather than be sent out of the country on a disagreeable mission. Money extorted from individuals by this or by any other method was usually called, doubtless in derision, a "benevolence."

These were a few of the grievances under which the

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The consequence of such opposite dispositions actuating the king and parliament was, that during this reign the prerogatives of the crown were openly and violently attacked. But the chief grounds of discontent were money and religion. The king's high notions of the royal prerogative made him imagine that he had a right to whatever sums he pleased to demand; whilst his profusion caused him to dissipate in a short time the scanty supplies which he succeeded in extorting from the parliament. With regard to religious matters, the nation was at that time greatly infected with Puritanism. Though the severities of Elizabeth had almost totally suppressed the Papists, it had been otherwise with the Puritans. So much had they increased by the very means which had diminished the number of Catholics, that no less than seven hundred and fifty clergymen of that persuasion signed a petition to James on his accession to the English throne. They hoped that the king, having received his education in Scotland, and always professed an attachment to the church established there, would at least abate the rigour of the laws enacted against the Puritans, if he did not show them particular favour and encouragement. But in this they were grievously mistaken. He had observed in their Scottish brethren a decided turn towards republicanism, and a zealous attachment to civil liberty. In his capacity of monarch as well as of theologian, he had experienced the little complaisance they were disposed to show him. They controlled his commands; disputed his tenets; and to his face, before the whole people, censured his conduct and behaviour. This superiority assumed by the Presbyterian clergy, the monarchical pride of James could never digest. Although he had been obliged, while in Scotland, to court their favour, he treasured up, on that account, the stronger resentment against them; and he was determined to make them feel, in their turn, the full weight of his authority. He therefore not only rejected the petition of the clergymen above mentioned, but throughout his whole reign refused to relax in the least the severity of the laws against

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Protestant nonconformists, although often petitioned to the contrary by his parliament.

The same principles which produced in James such an aversion to the Puritans, prompted him to favour the Episcopalians, and even the Catholics, as being greater friends to despotism. In his youth he had been suspected of a bias towards the ancient religion; and it is certain that when he ascended the throne of England, he often endeavoured to procure some mitigation of the laws against them, if not an absolute toleration. But in this he was constantly opposed by the parliament; and indeed the strong inclination shown by James to establish Episcopacy throughout the whole of his dominions, tended very much to alienate the minds of his subjects, especially in Scotland, and to create that suspicion of his intentions which accompanied him to the grave.

The first intercourse between King James and his English parliament discovered at once the character of the new monarch, and the spirit of the people over whom he had been called to reign. Vain, pedantic, garrulous, mean, and accessible to flattery, however gross; arbitrary in his principles, and in his own opinion the greatest master of king-craft that ever lived; "the wretched Solomon of Whitehall" found in his English ministers, Cecil, Suffolk, and Northampton, devoted parasites and ready tools. His address to the parliament bespoke his own opinion of himself, and showed that he believed himself an absolute king, whose proclamations were to have the force of laws. But it was only with his courtiers and bishops that James passed for that paragon of wisdom and policy which he devoutly believed himself to be. The House of Commons already contained many men of free, fearless, and intelligent minds; nor were the principles of independence, which in several instances had been asserted against all the power and energy of Elizabeth, likely to be veiled before the mock dignity of such a regal punchinello as James. His first parliament, accordingly, reminded him of their privileges; resisted the arbitrary issue, by the Chancellor, of new writs for elections; and made some laudable attempts to check the spirit of monopoly which paralysed the trade and manufactures of the kingdom, as well as to relieve the landed interest from some remnants of feudal oppression.

The accession of James was speedily followed by the conclusion of peace with Spain. The tendency of his disposition was pacific, not so much from principle, as from the want of all energy, vigour, and force of character, if not positive cowardice. But whilst the nation was thus delivered from the evils of war, a deadly blow was meditated against the government in all its branches, and against the religion of the country. This was the famous Gunpowder Plot, which the habitual fears of the king, sharpened by the scenes he had witnessed in his youth, enabled him to "nose out," as he called it, and to read the true meaning of the threats contained in a letter from one of the conspirators, after it had eluded the sagacity of his wisest counsellors. The common danger which the king and the parliament had escaped kept them for a time in good humour with each other; and a supply of £400,000 was voted by the Commons to relieve the king from the embarrassments in which his thoughtless profusion had involved him, and to enable him to give a suitable reception to his brother-in-law, the king of Denmark.

But the most important subject of discussion which occupied the attention of this first parliament was a project for incorporating the kingdoms whose crowns were already united on the head of James. A motion to this effect was made by Sir Francis Bacon, the king's solicitor, who supported it with all the ability, ingenuity, and eloquence for which he was so greatly distinguished; maintain-

ing that, for the object contemplated, there was no need of uniformity in the laws or religion of the two countries,—and that, with Ireland subdued, Scotland united, and the navy duly supported, the English monarchy would become the most formidable in the world. It is to the honour of James, and reflects credit on the sagacity which he at intervals displayed, that he was eager in forwarding this measure. But the Commons remained inflexible, and the project consequently failed. In conformity, however, with an opinion obtained from the judges, the *post-nati*, that is, all Britons born since the death of Queen Elizabeth, were declared to be naturalized subjects in either kingdom.

Pecuniary difficulties, from which the king was never free, brought him again as a suppliant for aid from this parliament. Squandering with reckless prodigality, he was continually in want; and, in the present instance, his embarrassments were aggravated by the expense incurred in maintaining his government in Ireland. The parliament acceded to his solicitations; but, in return, demanded a redress of grievances, and amongst these the suppression of the High Commission Court, which had become odious by the severities it exercised against the Puritans. James refused the supply tendered on such conditions, and the dispute ended by his dissolving the parliament; on which occasion the royal pedant told them "not to meddle with the main points of government—that was his craft; nor pretend to instruct a king who had been thirty years at the trade in Scotland, besides an apprenticeship of seven years in England."

But James found it impossible to dispense altogether with this "meddling" body. His usual extravagance soon reduced him to straits, notwithstanding the discreditable shifts he had recourse to for raising money; and, in 1613, he was obliged to convoke another parliament, for the sake of obtaining a supply. At this time Robert Carre, whom he had raised through several gradations of dignity to be Earl of Somerset, engrossed the favour of the monarch, and merited the hatred of the nation. The sums spent on this worthless minion, and the countenance shown him after the murder of Sir Thomas Overbury, at once degraded the king in the eyes of the people, and drained the scanty resources of his ill-supplied exchequer. The consequence was, that his second parliament proved still more refractory than the first. On their assembling, the king proposed to them to vote a supply, and then proceed to the consideration of such grievances as required to be redressed. But the Commons inverted this order of procedure, and began with the redress of grievances. The king's wrath was kindled at their obstinacy. He dismissed them, and imprisoned some of the members who had particularly signalized themselves in resisting the supply; a proceeding of fatal example, as the son and successor of James afterwards found to his bitter experience, and which Lord Coke justly describes as the greatest violence ever done to the constitution by an English monarch.

In 1617 the king revisited Scotland, with the design of establishing Episcopacy in that kingdom. He did not, however, propose to abolish Presbytery entirely, and set up Episcopacy in its room. He meant to content himself with establishing the royal authority above the ecclesiastical, and introducing some ceremonies into the public worship, such as kneeling at the sacrament, private communion, private baptism, confirmation of children, the observance of Christmas, and the like. But as his design was fully seen through from the beginning, every advance towards Episcopacy produced the greatest discontent, and the ceremonies in question were rejected as so many mortal sins.

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At this time the power of the Scotch clergy was exceedingly great; and the severe spirit with which they were actuated prompted them to exercise it in a manner little calculated to operate in the way of conciliation. Every ecclesiastical court possessed the power of excommunication, which was then attended with serious temporal effects, to say nothing of the spiritual consequences which were supposed to flow from it. The person excommunicated was shunned by every one as profane and impious; and his whole estate during his life-time, with all his movables for ever, were forfeited to the crown. A sentence of excommunication might be pronounced in a summary manner, even by an inferior ecclesiastical court, against a person, whether he lived within the bounds of their jurisdiction or not; and as its effects were in every instance the same, the power which the clergy thus exercised was truly formidable. But they were not satisfied with this unbounded authority in ecclesiastical matters; they assumed a censorial power over every part of the administration; and, mingling politics with religion in their sermons, and even in their prayers, they inculcated principles which were accounted alike turbulent and seditious. But however much we may revolt at this intermixture of sacred and secular things, there was something in the spirit and circumstances of the time which went far to justify it. The pulpit was then the only place whence the people could derive instruction, and their sole teachers and guides were the clergy. No public press as yet existed. Books were few and expensive, appearing at distant intervals, and wholly inaccessible to the mass of the people. Journals were wholly unknown. In such circumstances the clergy naturally became the political as well as the religious instructors of the people; the defenders of their civil rights as well as the guardians of public morals, and of the purity of ecclesiastical discipline.

That a monarch like James should have hated an order of men whom he could neither intimidate by his power nor cajole by his flatteries, is most natural. But this forms a poor justification for the faithless and hypocritical course he pursued; whilst his maxim of "No bishop, no king," shows that his understanding was as confined as his character was mean and grovelling. He began his attack upon Presbytery by discontinuing the General Assembly, and banishing those clergymen who had the spirit to remonstrate. He procured a decree restoring thirteen bishoprics; and, at a packed meeting of the subservient part of the Scottish clergy, the holders of these unenviable preferments were appointed perpetual moderators within their presbyteries. And to complete the degradation of the people, a high commission was given to the prelates, conferring upon them inquisitorial and discretionary powers of citing and punishing for religious opinions, laymen as well as clergymen. But this tyrannical and iniquitous project utterly failed. James aimed at nothing less than subverting the established religion of the country, and he was unable to introduce a single ceremony borrowed from Episcopacy. Not a rag of the surplice would the stern Presbyterians of that age consent to tolerate. Enough, however, was done to envenom the hatred of the people, and to treasure up vengeance against the coming day of retribution. James, it has been truly said, was one of those kings whom God seems to send for the express purpose of hastening revolutions.

Nor was he in any degree more successful in the opposition which he attempted to the puritanical innovations in England. He had observed, in his progress through that kingdom, that a rigid, or, as some called it, Judaical observance of the Sabbath gained ground every day; and that by this means the people were debarred from such sports and recreations as contributed to their health as well as amuse-

ment. Imagining that it would be easy to infuse cheerfulness into the spirit of devotion which then prevailed, he issued a proclamation to allow and encourage, after divine service, all kinds of lawful games and exercises. But this proclamation was regarded by his subjects as an instance of the utmost profaneness and impiety. In 1620 a bill was brought in by the Commons for the more strict observance of the Sunday, which they called the Sabbath. One Shepherd opposed this bill, objecting to the appellation of Sabbath, as puritanical, and justifying indulgence in sports and amusements on that day. For this he was expelled the house on the motion of Mr Pym; and in the sentence pronounced against him his offence is described as "great, exorbitant, and unparalleled." The men of that day were in earnest, and seldom did things by halves.

From this sketch, imperfect as it necessarily is, a tolerable idea may be formed of the situation of affairs during the reign of James I., as well as of the character and designs of that weak, wavering, and on the whole mischievous prince. It now becomes our duty to proceed to the more proper business of the present article, and to give some account of the remarkable transactions of this period.

The first thing of any consequence was a conspiracy formed, or alleged to have been formed, in the year of the king's accession to the throne, to displace him, and bestow the kingdom on Arabella Stuart, a near relation of his own, and equally descended from Henry VII. Every thing regarding this pretended conspiracy, except that some such plot was favoured by one or two priests, remains nearly in its original obscurity. What renders it remarkable, however, is the concern Sir Walter Raleigh was said to have in it. For this he was tried, condemned without proof, suffered thirteen years' imprisonment in the Tower, and was at length executed out of complaisance to the Spaniards. The execution of this distinguished man is one of the most unjustifiable acts of James's reign. It is certainly possible, as Hume has asserted, that Raleigh may have made the pretended gold mine in Guiana a cloak for his real design of plundering the Spanish settlements; but if the fact admitted of as easy proof as has been alleged, Raleigh ought to have been punished on that account, and on no other. It has been conceded, however, that an English jury would not have returned a verdict of guilty against him; and if so, the sacrifice of the bravest living commander, at the instigation of a foreign power, was equally detestable in itself and derogatory to the dignity and independence of the country.

Allusion having been already made to the Gunpowder treason, discovered in 1605, the origin and circumstances of that desperate plot shall now be detailed. On the accession of James, great expectations had been formed by the Catholics that he would prove favourable to them; and it is even pretended that he had entered into a positive engagement to grant them toleration as soon as he should mount the throne of England. But their hopes were built on an insecure foundation. James on all occasions expressed his intention of executing strictly the laws enacted against them, and of persevering in the rigorous measures of Queen Elizabeth. A scheme of revenge was first thought of by one Catesby, a man of good parts and ancient family, who communicated his design to Percy, a descendant of the house of Northumberland. The latter proposed to assassinate the king. But Catesby deemed this quite inadequate to the purpose, inasmuch as the king would be succeeded by his children, who would also inherit his maxims of government; and even if the whole royal family were destroyed, the parliament, nobility, and gentry, who were all infected with the same heresy, would raise another Protestant prince to the throne. "To serve any good purpose," said he, "we must destroy, at

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one blow, the king, the royal family, the lords and commons, and bury all our enemies in one common ruin. Happily they are all assembled on the first meeting of parliament, and afford us the opportunity of glorious and useful vengeance. Great preparations will not be requisite. A few of us may run a mine below the hall in which they meet; and choosing the very moment when the king harangues both the houses, consign over to destruction the determined foes to all piety and religion."

This comprehensive scheme being approved of, it was resolved to communicate it to a few more. Thomas Winter was sent over to Flanders in quest of Fawkes, an officer in the Spanish service, of approved zeal and courage. All the conspirators were bound by the most solemn oaths, accompanied with the sacrament; and to such a degree had superstition hardened their minds, that not one of them entertained the smallest compunction for the cruel destruction they were preparing to commit. Some indeed were startled at the thoughts of destroying a number of Catholics who must necessarily be present as spectators, or attendants on the king, or as having seats in the House of Peers; but Desmond a Jesuit, and Garnet, superior of that order in England, removed these scruples, by showing that the interest of religion required in this case the sacrifice of the innocent with the guilty.

This happened in the spring and summer of 1604, about which time the conspirators hired a house in Percy's name, adjoining that in which the parliament was to meet. Towards the end of the year they began to pierce through the wall of the house, in order to get in below that where the parliament was to assemble. The wall being about three yards thick, occasioned a great deal of labour; but its density yielded to perseverance, and they at length approached the other side, when they were startled by a noise for which they could not well account. Upon inquiry, they found that it proceeded from a vault below the House of Lords; that a magazine of coals had been kept there; and that the coals were then selling off, after which the vault would be let to the highest bidder. Upon this the vault was immediately hired by Percy, and thirty-six barrels of gunpowder lodged in it; the whole being covered up with faggots and billets, the doors of the cellars boldly flung open, and every body admitted as if it contained nothing dangerous.

Considering themselves as now certain of success, the conspirators began to arrange the remaining part of their enterprise. The king, the queen, and Prince Henry, were expected to be present at the opening of the parliament. But as the duke, by reason of his tender age, would be absent, it was resolved that Percy should seize or murder him. The Princess Elizabeth, likewise a child, being kept at Lord Harrington's house in Warwickshire, some others of the conspirators engaged to assemble their friends on pretence of a hunting match, to seize the person of that princess, and immediately proclaim her queen. The day so long wished for at last approached. The dreadful secret, though communicated to more than twenty persons, had been religiously kept for near a year and a half; and nothing could be foreseen calculated to prevent the success of their design. Ten days before the meeting of parliament, however, Lord Montague, a Catholic, son of Lord Morley, received the following letter, which had been delivered to his servant by an unknown hand.

"My Lord, out of the love I bear to some of your friends, I have a care for your preservation. Therefore I would advise you, as you tender your life, to devise some excuse to shift off your attendance on this parliament. For God and man have determined to punish the wickedness of this time. And think not slightly of this advertisement; but retire yourself into the country, where you

may expect the event in safety. For though there be no appearance of any stir; yet, I say, they shall receive a terrible blow this parliament, and yet they shall not see who hurts them. This counsel is not to be contemned, because it may do you good, and can do you no harm; for the danger is over as soon as you have burned this letter. And I hope God will give you the grace to make good use of it, to whose holy protection I commend you."

Though Lord Montague imagined this letter to be only a ridiculous artifice to frighten him, he carried it to Lord Salisbury, secretary of state; and the latter laid it before the king on his arrival in town a few days after. His majesty looked upon it in a much more serious light than the young nobleman to whom it had been addressed. From the peculiar manner in which it was expressed, he concluded that some design had been formed to blow up the Parliament House with gunpowder; and it was thought advisable to search the vaults underneath.

The lord chamberlain, to whom this charge belonged, purposely delayed the search till the day before the meeting of parliament. He remarked the great piles of wood and faggots which lay in the vault under the House of Lords; and casting his eye upon Fawkes, who stood in a corner and passed himself for Percy's servant, he could not help noticing the daring and determined courage conspicuous in his face, and which so much distinguished this man even amongst the other conspirators. As Percy lived little in town, so large a quantity of fuel appeared somewhat extraordinary; suspicions were thus excited; and, upon comparing all circumstances, it was resolved to make a further search. About midnight, Sir Thomas Knevet, a justice of peace, was sent with proper attendants; and meeting Fawkes, who had just finished all his preparations, before the door of the vault, Sir Thomas immediately seized him, and, turning over the faggots, discovered the gunpowder. The matches and every thing proper for setting fire to the train were found in the pocket of Fawkes, who seeing now no refuge except in boldness and despair, expressed the utmost regret that he had missed the opportunity of firing the powder at once, and of sweetening his own death by that of his enemies. For several days he displayed the same obstinate intrepidity; but on being shut up in the Tower, and the rack exhibited to him, his resolution at last failed, and he made a full discovery.

Catesby, Percy, and the other conspirators, on learning that Fawkes was arrested, hurried to Warwickshire, where Sir Edward Digby, imagining that his confederates had succeeded, was already in arms to seize the Princess Elizabeth. But she had escaped into Coventry; and they were obliged to put themselves in a posture of defence against the country people, who were raised in all quarters and armed by the sheriffs. The conspirators, with their attendants, never exceeded eighty in number, and being surrounded on every side, could no longer hope either to prevail or escape. Having therefore confessed themselves, and received absolution, they boldly prepared for death, and resolved to sell their lives as dear as possible. But even this miserable consolation was denied them. Some of their powder catching fire, exploded, and disabled them from defending themselves. The people then rushed in upon them. Percy and Catesby were killed by one shot. Digby, Rookwood, Winter, and others, being made prisoners, were tried, confessed their guilt, and died, as well as Garnet, by the hands of the common executioner. The Lords Stourton and Mordaunt, two Catholics, were fined by the Star Chamber, the former in £4000, the latter in £10,000, because their absence from parliament had occasioned a suspicion of their acquaintance with the conspiracy. The Earl of Northumberland was fined in £30,000, and detained several years a prisoner in

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Reign of James I. of the Tower, by reason of his having admitted Percy into the number of gentlemen-pensioners without taking the requisite oaths.

James's attempts to civilize the barbarous inhabitants of Ireland, and to render their subjection durable and useful to the crown of England, were more honourable in the design than successful in the execution. He began by abolishing the ancient Irish customs which supplied the place of laws, and were exceedingly barbarous and absurd. By the Brehon law, every crime, however enormous, was punished only by fine. Murder itself was compensated in this way. Every one had a value affixed to him, called his *eric*; and he who was able to pay this, might kill whomsoever he pleased. As for such slight offences as oppression, extortion, or other things of that nature, no penalty was affixed to them, nor could any redress be obtained for them. The custom of *gavelkind*, by which, upon the death of any person, his land was divided amongst all the males of the sept or family, both bastard and legitimate, also operated as a powerful preventive to improvement, and commenced that incessant subdivision of the soil, the bitter consequences of which we have lived to witness. Having abolished these customs, James substituted English law in their stead, and taking the natives under his protection, he declared them free citizens, and proceeded to govern them by a regular administration, military as well as civil. But other measures of a more doubtful character followed. As the Irish had been engaged in rebellion against Elizabeth, a renunciation of all rights formerly granted them to separate jurisdictions was rigorously exacted; a resignation of private estates was even required; and when these were restored, the proprietors received them back under such conditions as seemed calculated to prevent all future oppression of the common people. Meanwhile a company was established in London for planting new colonies in the province of Ulster, which had fallen to the crown by the attainder of rebels. The property was divided into moderate shares, the largest not exceeding 2000 acres; tenants were brought over from England and Scotland; the Irish were removed from the hills and fastnesses, and settled in the open country; husbandry and the arts were taught them; and Ulster, from being the most wild and disorderly province in Ireland, became in time the best cultivated and most civilized.

On the 6th of November this year Henry prince of Wales died suddenly, not without strong suspicions of poison. On opening his body, however, no symptoms of the kind appeared; but his death diffused a universal grief throughout the nation, as he was reckoned a prince of extraordinary accomplishments and high promise. But the marriage of the Princess Elizabeth with Frederic, elector palatine, which was celebrated in February 1613, served to dissipate the grief caused by Prince Henry's death. This marriage, however, proved unfortunate both with respect to the king and to his son-in-law; for the elector, trusting to so great an alliance, engaged in enterprises beyond his means; and James, unable, and perhaps also unwilling, to assist him in his distress, lost his last hold on the affections of his people.

These bad consequences did not begin to appear till the year 1619. At that time the states of Bohemia, having taken arms in defence of the Protestant religion, and persevered in the contest notwithstanding the preparations of the emperor to crush them, made an offer of their crown to the elector palatine, induced doubtless by his connection with the king of England, and his relationship to Prince Maurice, whose authority in the United Provinces was nearly absolute. Stimulated by ambition, the young palatine, without consulting either James or Maurice,

whose opposition he foresaw, accepted the offer, and marched into Bohemia in support of his new subjects. But the affairs of the new king soon came to a crisis. Frederic, defeated in the decisive battle of Prague, fled with his family into Holland; whilst Spinola the Spanish general invaded the palatinate, where, meeting with little resistance, except from one body of 2400 Englishmen commanded by Sir Horace Vere, he quickly reduced the whole principality. The ban of the empire was published against the unfortunate elector in 1621; the upper palatinate was in a little time conquered by the elector of Bavaria, to whom the execution of the decree of the diet had been committed; Frederic was obliged to live with his numerous family in poverty and distress, either in Holland or at Sedan; and the new conquests of the Catholics throughout Germany were attended with persecutions against the Protestants.

By this intelligence the religious zeal of the English was inflamed to the highest pitch. The sufferings of their Protestant brethren in Germany excited universal sympathy, whilst the neutrality and inactivity of James were loudly exclaimed against. But although the king might have defended his pacific measures by plausible arguments, some of his motives were the most ridiculous that can be conceived. In a spirit of pedantic self-conceit, he fancied himself capable of disarming hostile nations by dint of argument; and believed that the power of Austria, though not awed by that of England, would submit to his arbitration merely out of respect to his virtue and moderation. Wedded to his notions concerning the prerogative of kings, he also imagined, that wherever a contention arose between any sovereign and his subjects, the latter must necessarily be in the wrong; and for this reason he from the first denied his son-in-law the title of king of Bohemia, and forbade him to be prayed for in the churches under that appellation. Besides, James was on other accounts extremely averse to a rupture with Spain. He had entertained an opinion peculiar to himself, that any alliance below that of a king was unworthy a prince of Wales; and he never would allow any princess except a daughter of France or of Spain to be mentioned as a match for his son. This pitiful folly gave Spain an opportunity of managing the English monarch in his most important concerns. With a view of engaging him to observe neutrality in regard to the succession of Cleves, the elder daughter of the king of Spain had been indirectly offered during the life of Prince Henry. The bait, however, did not then take; and James, in consequence of his alliance with the Dutch, sent 4000 men to the assistance of the Protestants, by which means the succession was secured to the Protestant line. In 1618, Gondomar offered the king of Spain's second daughter to Prince Charles; and, to render the temptation irresistible to so necessitous a prince as James, he gave hopes of an immense dowry with the Infanta. On this match James built great hopes, not only of relieving his own necessities, but of recovering the palatinate for his son-in-law; at least the public were taught to believe that the recovery of the palatinate was one of the king's chief motives for entertaining the project of such a marriage.

But the Commons viewed the matter in a very different light; and this, joined to other parts of the king's conduct, blew into a flame the contention which had long subsisted between them. On the 14th of November 1621, the Commons framed a remonstrance, which they intended to carry to the king, representing that the enormous growth of the Austrian power threatened the liberties of Europe; that the progress of the Catholic religion in England bred the most melancholy apprehensions; that the indulgence of his majesty towards the professors of that religion had

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encouraged their insolence and temerity; that the uncontrolled conquests made by the Austrian family in Germany raised mighty expectations in the English Catholics; and particularly that the proposed Spanish match had led them to hope for the entire toleration, if not final re-establishment, of their religion. They therefore entreated his majesty to undertake the defence of the palatinate, and maintain it by force of arms; to turn his sword against Spain, whose armies and treasures were the chief support of the Catholic interest in Europe; to enter into no negotiation for the marriage of his son except with a Protestant princess; to cause the children of Popish recusants to be taken from their parents and committed to the care of Protestant teachers and schoolmasters; and to exact with the utmost severity the fines and confiscations to which the Catholics by law were liable. Protestants had not yet learnt toleration in the school of adversity. The king was then at Newmarket; but hearing of the intended remonstrance, he wrote a letter to the Speaker, sharply rebuking the House for debating on matters far above their reach and capacity, and strictly forbidding them to meddle with any thing that regarded his government, or deep matters of state, and especially not to touch on his son's marriage with the Spanish princess. Upon this the Commons framed a new remonstrance, in which they asserted their right of debating on all matters of government, and claimed entire freedom of speech in their debates. The king replied, that their remonstrance was more like a denunciation of war than an address of dutiful subjects; that their pretension to inquire into all state affairs without exception, was such a plenipotency as none of their ancestors, even during the reign of the weakest princes, had ever pretended to; that they could not better show their wisdom, as well as duty, than by keeping within their proper sphere; and that in any affair which depended on his prerogative, they had no title to interpose with their advice, unless when he pleased to ask it. The Commons in return framed the protestation already mentioned, which the king tore out of their journals, and soon after dissolved the parliament. Of the leading members of the house, Sir Edward Coke and Sir Robert Phillips were committed to the Tower, and Selden, Pym, and Mallory, to other prisons; while, as a lighter punishment, some others were sent into Ireland to execute the king's commands in that country. A more judicious course was followed with Sir John Saville, who was made comptroller of the household, a privy councillor, and soon after a baron.

This open breach between the king and the parliament soon rendered politics a general subject of discourse; every man began to indulge himself in reasonings and inquiries concerning matters of state; and the parties which arose in parliament were speedily propagated throughout the nation. In vain did James, by reiterated proclamations, forbid discourses of this kind. These, if they had any effect at all, served rather to inflame than allay the curiosity of the public. In every company or society the transactions just mentioned became the subject of argument and debate; some taking the side of monarchy, and others that of liberty. And this was the real origin of the two parties since known by the names of *Whigs* and *Tories*.

During five years James continued the dupe of the court of Spain. Firmly resolved to contract no alliance with a heretic, the king of Spain continued to procrastinate and invent one excuse after another; pretending all along a willingness to conclude the match, though no step had as yet been taken for obtaining a dispensation from the pope. To pave the way for bringing the matter to a close, James issued public orders for discharging all popish recusants who were imprisoned; and it was daily apprehended that

he would prohibit in future the execution of the penal laws against them. This conduct, generous had it proceeded from genuine principles of toleration, he was obliged to justify on the hollow pretence that it was done in order to procure from foreign princes a corresponding indulgence for the Protestants; the severity of the English laws against Catholics having, it was alleged, been urged as a reason against showing any favour to Protestants residing in Catholic kingdoms.

Armed with these concessions, which were but ill relished at home, Digby, earl of Bristol, was sent as ambassador to the court of Spain; and one Gage was secretly dispatched as an agent to Rome. After amusing him so long with false hopes, the court of Spain seemed at last sincere in the projected marriage. Lord Bristol himself, although he had formerly opposed the Spanish match, now came to be of this opinion, and considered the proposed marriage as an infallible prognostic of the palatine's restoration; nor, indeed, was it easy to conjecture why Philip should be ready to bestow the Infanta with a dowry of £600,000 sterling on a prince whose demands he meant to refuse at the hazard of a war, unless we suppose that he reckoned on the cowardice and imbecility of the English monarch's character.

But whilst the king exulted in his pacific counsels, and boasted of his superior sagacity and penetration, all his prospects were blasted by the temerity of the worthless favourite who governed both court and nation with almost unlimited sway. This was Villiers, duke of Buckingham, who had succeeded Somerset in the capricious affections of James, and had risen from the rank of cupbearer to a dukedom and the highest honours of the state. Though possessed of some accomplishments as a courtier, he was utterly devoid of the talent necessary to a minister; and at once partook of the insolence which attends a fortune newly acquired, and the impetuosity which belongs to persons born in high stations, and unacquainted with opposition. Amongst those who had experienced the arrogance of this overgrown favourite, was the Prince of Wales himself; and a coldness, if not enmity, had in consequence arisen between them. Desirous of putting an end to this misunderstanding, and at the same time envious of the great reputation of the Earl of Bristol, Buckingham persuaded the prince to undertake a journey to Madrid. This, he said, considered as an unexpected piece of gallantry, would equal all the fictions of Spanish romance; and, suiting the chivalrous and enterprising character of that nation, would immediately introduce him to the princess under the agreeable character of a devoted and adventurous suitor. Little persuasion was necessary to prevail with Charles to undertake the journey; and the impetuosity of the favourite having extorted a consent from James, the prince and Buckingham (or "Baby Charles" and "Steenie," as the king ridiculously called his son and his minion) set out as knight-errant and squire. They travelled through France in disguise, under the assumed names of Jack and Tom Smith. At a ball in Paris, the prince first saw the Princess Henrietta, whom he afterwards married. She was then in the bloom of youth and beauty, and the novelists of the time say that the prince fell in love with her on this occasion.

On their arrival at Madrid, every body was surprised by a step so little usual among great princes. The Spanish monarch made Charles a visit, expressed the utmost gratitude for the confidence reposed in him, and made warm protestations of a corresponding confidence and friendship. He gave Charles a golden key which opened all his apartments, that the prince might, without any formality, have access to him at all hours; and heaped upon him other marks of distinction and favour if possible still more flat-

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Reign of James I. tering. The Infanta, however, was only shown to her lover in public; the Spanish ideas of propriety being too strict to allow any further intercourse till the arrival of the dispensation. Meanwhile no attempt was made by the Spaniards to profit by the circumstance of having the prince of Wales in their power, in order to impose any harder conditions of treaty. Their Catholic zeal, indeed, prompted them on one occasion to seek more concessions in the religious articles; but, on the opposition of Bristol, they immediately desisted. The pope, however, hearing of Charles's arrival in Madrid, tacked some new clauses to the dispensation; and it became necessary to transmit the articles to London for the king's ratification. This treaty, which was made public, consisted of several articles, chiefly regarding the exercise of the Catholic religion by the Infanta; and of these, the only one that could reasonably be found fault with, was that in which the king consented that the children of the marriage should be educated by the princess till they were ten years of age. But besides this public treaty, there were some private articles, which stipulated for a suspension of the penal laws against the English Catholics in the first instance, together with a toleration for the exercise of the Roman Catholic religion in private houses, and, next, a repeal of these laws by parliament. Meanwhile Gregory XV. who had granted the dispensation, died; and Urban VIII. was chosen as his successor. Upon this the nuncio refused to deliver the dispensation till the pleasure of the new pope should be known concerning it. But the crafty pontiff delayed his confirmation, in hopes that, during the prince's residence in Spain, some expedient might be fallen upon to effect his conversion. The king of England, as well as his son, became impatient; but, on the first hint, Charles obtained leave to return, and Philip graced his departure with the same marks of civility and respect which had signalled his arrival.

The modest, reserved, and highly dignified behaviour of Charles, together with the confidence he had reposed in the Spanish nation, and the romantic gallantry he had practised in regard to their princess, endeared him to the whole court of Madrid. But in the same proportion that Charles was beloved and esteemed, Buckingham was despised and hated. His sallies of passion, his indecent freedoms with the prince, his dissolute pleasures, and his arrogant, impetuous temper, which he either could not or would not restrain, rendered him an object of undisguised aversion to the Spaniards. Buckingham, on the other hand, sensible how odious he had become to the Spaniards, and dreading the influence which that nation would naturally acquire after the arrival of the Infanta, employed all his influence to prevent the marriage. What arguments he used to prevail with the prince to offer so gross an insult to the Spanish nation, from whom he had received the most generous treatment, or what colours he employed to disguise the ingratitude and imprudence of such a measure, are totally unknown. Certain it is, however, that when the prince left Madrid, he was firmly determined, in opposition to his most solemn promises, to break off the treaty with Spain. Accordingly, on their arrival at London, the prince and Buckingham assumed the entire direction of the negotiation; and it was not difficult to find pretences under which to mask the breach of treaty which had been secretly resolved on. After employing many fruitless artifices to delay or prevent the espousals, Bristol received positive instructions not to deliver the proxy which had been left in his hands, nor to conclude the marriage until security was given for the full restitution of the palatinate. Philip understood this language; but, determined to throw the whole blame of the rupture on the English, he delivered into Bristol's hand a written

promise, by which he bound himself to procure the restoration of the palatinate either by persuasion or by every other possible means. When he found that this concession gave no satisfaction, he ordered the Infanta to lay aside the title of Princess of Wales, which she had borne after the arrival of the dispensation from Rome, and to drop the study of the English language; and as he foresaw that the rash counsels which now governed the court of England would not stop short at the breach of the marriage-treaty, he immediately ordered preparations for war to be made throughout all his dominions.

A match for Prince Charles was soon afterwards negotiated with Henrietta, daughter of Henry IV., and this met with much better success than that with the Infanta. But the king had not the same inducements to prosecute this match as the former one, the portion promised being much smaller; yet willing that his son should not be altogether disappointed of a bride, and the king of France demanding only the same terms which had been offered to the court of Spain, James thought proper to comply. In an article of this treaty of marriage, it was stipulated that the education of the children till the age of thirteen should belong to the mother; and this probably gave that turn towards popery which afterwards proved the ruin of the unfortunate house of Stuart.

Being now deprived of every other hope of relieving his son-in-law, except by force of arms, James declared war against Spain and the emperor, for the recovery of the palatinate; and six thousand men were sent over into Holland to assist Prince Maurice in his schemes against those powers. The people were everywhere elated at the course which events had taken; and so popular was the idea of a Spanish war, and so great the joy at the rupture of the projected Catholic alliance, that Buckingham became for the time a favourite of the people, and was hailed even by Sir Edward Coke as the saviour of the nation. The reinforcement sent to Prince Maurice was followed by another consisting of twelve thousand men, commanded by Count Mansfeldt; and the court of France promised its assistance. But the English were disappointed in all their views. The troops embarked at Dover found, on arriving at Calais, that no orders had arrived for their admission into that place, much less for affording them a passage through France, as had been promised; and after waiting some time, they were obliged to sail towards Zealand, where proper measures had not as yet been taken for their disembarkation. Meanwhile a pestilential disorder crept in amongst them; half their number died while on board, and the other half, weakened by sickness, was insufficient to march into the palatinate; and thus ended this ill-concerted and fruitless expedition. Whether its unfortunate result had any effect on the king's health is uncertain; but he was soon after seized with a tertian ague, which put an end to his life on the 27th of March 1625, after having lived fifty-nine years, and reigned over England twenty-two, and over Scotland almost as long as he had lived.

James, the son of Queen Mary and of Lord Darnley, the handsomest couple of their age, was lumpish, not to say deformed, in his person, vulgar in his air, and ungainly in his manners. He had an awkward figure, a rolling eye, a ricketty sidelong walk, nervous tremblings, a slobbering mouth, and a boyishness of manner which formed a ludicrous contrast with the airs of dignity and regal state which he was constantly labouring to assume. These imperfections, it is true, might have been found in the best and greatest man; and it is seldom indeed that nature is equally lavish in physical and mental endowments. But, in this king, the ungainliness of his outward man was not redeemed by intellectual or moral qualities calculated to insure admiration or regard. He possessed

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CHAP. III.

REIGN OF CHARLES I.

Accession of Charles I.—His character as contrasted with that of his father.—First Parliament.—Their niggard supply.—Dissolved.—New Parliament.—Impeachment of Buckingham.—Arbitrary proceedings of the King.—Disputes.—Dissolution.—Ship-money.—Forced loan resisted.—Remarkable trial.—War with France.—Buckingham's Expedition.—Third Parliament.

—Petition of Right.—Duplicity of Charles.—Royal assent at length given to the Bill.—Assassination of Buckingham.—Tonnage and poundage.—Parliament dissolved.—Peace concluded with France and Spain.—Archbishop Laud.—Religious Innovations.—New Ministry.—Strafford.—Arbitrary measures of the King.—John Hampden prosecuted for the payment of ship-money.—Particulars of this memorable case.—Hampden, Cromwell, and other Puritans prevented from emigrating to North America.—Attempt to introduce Episcopacy into Scotland.—The Covenant.—King tries to soothe the Covenanters.—Assembly at Glasgow.—Episcopacy abolished.—War.—Peace.—War again declared.—A Parliament called and dissolved.—Pecuniary distresses of the King.—Royalists defeated at Newburn.—Treaty of Rippon.—Meeting of Parliament.—Impeachment, trial, and execution of Strafford.—Injustice of this proceeding.—Parliament rendered perpetual.—Imprisonment of Laud.—Delinquency.—Charles's visit to Scotland.—His concessions and promotions.—The Incident.—Rebellion and Massacre of the Protestants in Ireland.—Reasons for attaching suspicion to the King.—Proceedings of the English Parliament.—Acrimonious remonstrance of the Commons.—Their violent proceedings.—Roundheads and Cavaliers.—The Bishops retire from the House of Lords.—Impeachment, by the King's order, of six members of Parliament.—He goes in person to seize them.—Consequences of this rash act.—Proffered concessions unavailing.—Commons demand the surrender of the executive power of the state.—Refused by the King.—War between the King and Parliament.

Charles I. succeeded to the same favourite, the same ministers, and the same council, which his father had possessed, to say nothing of the same pecuniary distress; and, unhappily, he also inherited the same principles of government. But in other respects he bore no resemblance to his sire. "He was neither a driveller nor a pedant, a buffoon nor a coward. Even in the judgment of his enemies he was a scholar and a gentleman, a man of exquisite taste in the fine arts, and of strict morals in private life. His talents for business were respectable, and his demeanour was grave, dignified, and kingly. But he was false, imperious, obstinate, narrow-minded, ignorant of the temper of his people, and unobservant of the signs of the times. The main principle of his government was resistance to public opinion; and hence his concessions were delayed till it mattered not whether he resisted or yielded, till the nation, which had long ceased to love or to trust him, had at last ceased also to fear him." (*Edinb. Rev.* vol. liv. p. 515.) At the same time his accession to the throne was greeted with favour, and even hailed as auspicious by the nation, which had been wearied and sickened by the pedantic and presumptuous incapacity of his father. Nothing is more easy than for princes to gain golden opinions; nothing more difficult than to rule with wisdom and moderation in those great crises when the national mind becomes agitated by a new spirit, and when the old frame of government must either accommodate itself to the advancing state of society, or be dashed in pieces by a rude collision with a new and resistless force. Pleased with his temporary popularity, obtained partly by the rupture with Spain, and also in want of money for carrying on his government, Charles resolved to call together the great council of the nation; and, accordingly,

¹ *Edinburgh Review*, vol. liv. p. 512. "The sovereign whom James most resembled," says the very able writer of the article here referred to, "was, we think, Claudius Cæsar. Both had the same feeble and vacillating temper, the same childishness, the same coarseness, the same poltroonery. Both were men of learning; both wrote and spoke—not, indeed, well, but still in a manner in which it seems almost incredible that men so foolish should have written or spoken. The follies and indecencies of James are well described in the words which Suetonius uses respecting Claudius:—'Multa talia, etiam privatis deformia, necdum principi, neque infacundo, neque indocto, immo etiam pertinaciter liberalibus, studiis dedito.' The description given by Suetonius, of the manner in which the Roman prince transacted business, exactly suits the Briton. 'In cognoscendo ac decernendo mira varietate animi fuit, modo circumspectus et sagax, modo inconsultus ac præceps, nonnunquam frivolus amentique similis.' Claudius was ruled successively by two bad women; James successively by two bad men. Even the description of the person of Claudius which we find in the ancient memoirs might in many points serve for that of James. 'Ceterum et ingredientem destituebant poplites minus firmi, et remisse quid vel serio agentem multa dehonestabant, risus indecens, via turpior, spumante rictu, præterea linguæ tibubantia?'"

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he issued writs for summoning a new parliament for the 7th of May 1625. But the arrival of the Princess Henrietta, whom he had espoused by proxy, obliged him to delay, by repeated prorogations, their meeting till the 18th of June, when they assembled at Westminster for the dispatch of business.

The king's discourse to the parliament was full of apparent simplicity and cordiality. He mentioned cursorily the occasion he had for supply, but, it is said, employed no means to influence the suffrages of the members. The officers of the crown, who had seats in the house, were not even allowed to specify the particular sum which he had occasion for; he trusted entirely to the wisdom and affection of his parliament. But the parliament, composed chiefly of Puritans, was not in a humour to be generous, or even just, in appreciating the king's necessities. They knew that all the money formerly granted had been expended on military and naval preparations; that great anticipations were made on the revenues of the crown; that the king was loaded with a debt contracted by his father, who had borrowed money both from foreign princes and from his own subjects; that the public revenues could with difficulty maintain the dignity of the crown, even under the ordinary charges of government; that the present war had been, in a great measure, the result of their own importunate applications and entreaties; and that the nation was solemnly pledged to support their sovereign in carrying it on. They could not be ignorant of the difficulty of military enterprises directed against the whole house of Austria; against the king of Spain, possessed of the greatest riches and most extensive dominions of any prince in Europe; against the Emperor Ferdinand, hitherto the most fortunate monarch of the age, who had astonished Germany by the rapidity of his victories. Yet, with all this knowledge, and to answer all these important ends, the commons thought proper to vote a supply of only £112,000. The excuses which have been made for this insulting parsimony are, the hatred of Buckingham, and the discovery that the war had been produced by his artifices and intrigues. But the validity of this apology may reasonably be disputed. If the war was judged impolitic or unnecessary, it became the duty of the Commons to address the king, praying him to abandon it. If it was neither the one nor the other, they ought not to have avenged themselves for a trifling grievance by insulting the king and degrading the country.

The parliament was adjourned for a few weeks in summer by reason of the plague, which had suddenly broken out; but on their re-assembling at Oxford, the king represented, in the most explicit manner, the necessity there was for a large supply, urging that this request was the first he had ever made them; that he was young, and in the commencement of his reign; and that if he now met with kind and dutiful usage, it would endear to him the use of parliaments, and for ever preserve an entire harmony between him and his people. But the Commons remained inexorable, refusing even the addition of two fifteenths to the former supply. They renewed their complaints against the growth of popery; they demanded a strict execution of the penal laws against the Catholics; they remonstrated against some late pardons granted to priests; and they attacked Montague, one of the king's chaplains, on account of a book he had lately composed, in which it was maintained that virtuous Catholics as well as other Christians would be saved from eternal torments. Charles gave them a complaisant answer, but at the same time firmly resolved to abate somewhat of the rigorous laws against that unfortunate party, which his engagements with France absolutely required. No measure of his whole reign, however, proved more obnoxious to his

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intolerant subjects, or in its consequences more fatal to himself, than this resolution. The Puritans, who had continued to gain ground during the whole reign of James, now formed the majority of the House of Commons. Petitions were consequently presented to the king for replacing such clergymen as had been silenced for want of conformity to the ceremonies; and laws were enacted for the strict observance of Sunday, which was sanctified with the most rigid and melancholy gloom. The inevitable result of all this was the dismissal of the refractory parliament, which was dissolved on the 12th of August.

During this interval Charles had been obliged to borrow from his subjects on privy-seals and other expedients, by which means he was enabled, though with great difficulty, to equip a fleet destined to act against Spain. But the force thus painfully fitted out performed nothing worthy of notice, and the ill success of the enterprise only served to increase the clamours against the court.

Charles's second parliament, which was speedily convoked, adopted substantially the same views as the first, though without pushing their parsimony to such meanness. They voted a supply of three subsidies, amounting to £168,000 and three fifteenths; but the passing of this vote into a law was reserved until the end of the session; a proceeding which was tantamount to a threat of withholding it unless their demands were satisfied. Charles was greatly incensed at this conduct; but he found it prudent to submit, and to wait the event with patience. In the mean time the Commons attacked the Duke of Buckingham, who had become generally obnoxious; and he was also impeached by the Earl of Bristol in the Lords, on account of his conduct in the Spanish negociation. But the earl's impeachment was entirely overlooked, and the Commons taxed Buckingham with offences, such as administering physic to the late king without consent of his physicians, from which he found little difficulty to exculpate himself. While under this impeachment, Buckingham was elected chancellor of the university of Cambridge, and the king publicly thanked the university for their wise and proper choice. This was keenly resented by the Commons; but when they loudly complained of the affront, the lord-keeper commanded them, in the king's name, not to meddle with his minister and servant, but to finish in a few days the bill they had begun for the subsidies, otherwise they must expect to sit no longer. And to strip this imprudent menace of all disguise, Sir Dudley Carlton emphatically explained it by allusion to those monarchs in Christendom who, owing to the turbulence of their subjects, had been obliged to overthrow parliaments altogether. Nor was this the whole, or even the worst. Adding injury to indignity, the king next ordered two members of the House of Commons, Sir John Eliot and Sir Dudley Digges, the chief managers of the impeachment against the duke, to be thrown into prison, alleging as the reason of this proceeding certain seditious expressions said to have dropped from these members. Upon inquiry, however, it appeared that no such expressions had been uttered; and as the Commons refused to proceed with any business until they received satisfaction in their privileges, the members were accordingly released, though with a very bad grace. Soon after, the House of Lords, moved by the example of the Commons, claimed liberty for the Earl of Arundel, who had been lately confined in the Tower; and after many fruitless evasions the king was obliged, though somewhat ungraciously, to comply with their demand.

The next attack meditated by the Commons, if successful, would have proved decisive, and reduced the king to an absolute dependence on his parliament. They were preparing a remonstrance against the levying of tonnage and poundage without consent of the legislature. This

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impost, together with six new ones laid on merchandise by King James, constituted nearly one-half of the crown revenues; and it was therefore of vital importance to the king, situated as he was, to preserve it entire, although there can be no doubt whatever that, in its own nature, it was an odious and oppressive tax. It was also the intention of the Commons, if they succeeded in carrying this point, to petition the king to remove Buckingham from his presence and councils. But the king, alarmed at the blow which was preparing for him, anticipated the Commons by dissolving parliament, on the 15th of June 1626. The House of Lords in vain interceded. The king was determined on his course; and when the Peers prayed that the parliament might be allowed to continue its sittings, he replied in anger, "Not a moment longer." The king and the Commons at their separation published each an appeal to the nation.

Charles having thus made a breach with his parliament which there were no hopes of repairing, was obliged to have recourse to the naked exercise of his prerogative in order to supply himself with money. A commission was openly granted to compound with the Catholics, and dispense with the penal laws enacted against them; an expedient by which the king filled his coffers, but gave universal disgust to his subjects. From the nobility he desired assistance; from the city of London he required a loan of £100,000. The former contributed but slowly; the latter, sheltering themselves under many pretences and excuses, gave at last a flat denial. To equip a fleet, an apportionment was made by order of the council amongst all the maritime towns, each of which was required, with the assistance of the adjacent counties, to furnish a certain number of vessels or amount of shipping. The city of London was rated at twenty ships. And this was the first appearance, in the present reign, of ship-money; a taxation which had once been imposed by Elizabeth on a great emergency, but which, revived and carried some steps farther by Charles, produced the most violent discontents. These summary methods of supply, however, were employed with some moderation, until the tidings arrived of the king of Denmark's defeat by Tilly, the imperial general. Money then became more than ever necessary; and as the ways and means hitherto employed had not answered expectation, it was suggested in council, as the most speedy, equal, and effective means of obtaining a supply, to exact a general loan from the subject, rating every man according as he was assessed in the rolls of the last subsidy. The precise sum required was what each would have paid had the vote of four subsidies passed into a law; but it was at the same time ostentatiously declared that the sums thus exacted were not to be considered as subsidies, but as loans.

This paltry and equivocating subterfuge imposed upon no one. It was plain that by the course which the court was now pursuing, the liberty of the subject would be entirely destroyed, and parliaments in future rendered wholly superfluous. It was to no purpose, therefore, that the followers of the court, and their preachers in the pulpit, enjoined submission to this loan as part of the duty of passive obedience and non-resistance. A spirit of opposition arose among the people; many refused these loans; and some were even active in encouraging their neighbours to insist upon their common rights and privileges. By a warrant of the council these were thrown into prison, and most of them patiently submitted to confinement, although such as applied to the king by petition were commonly released. Five gentlemen alone, Sir Thomas Darnel, Sir John Corbet, Sir Walter Earl, Sir John Heweningham, and Sir Edmond Hampden, demanded release, not as a favour from the court, but as their

right by the law. No particular cause was assigned for their commitment; the special command of the king and council was alone pleaded. But it was alleged, that, by law, this was not sufficient reason for refusing bail or release to the prisoners. The question was brought to a solemn trial before the Court of King's Bench, and the whole kingdom was attentive to the issue of the cause. By the debates on this subject, it appeared that personal liberty had been secured by no less than six different statutes, and by an article in Magna Charta itself. In times of turbulence and sedition, indeed, the princes had infringed upon these laws; and of this several examples were produced. The difficulty then lay to determine when such violent measures were necessary, and of that the court pretended to be supreme and only judge. As it was found to be legal, however, that the five gentlemen should plead the statute, by which they might demand bail, so it was deemed expedient by the court to remand them to prison, without determining on the necessity of taking bail for the present. This was a cruel evasion of justice; and, as might be expected, satisfied neither party. The court insisted that no bail could be taken; the country exclaimed that the prisoners ought to be set free.

While the king was thus embroiled with his parliament at home, and with powerful nations abroad, he rashly engaged in a war with France, a kingdom with which he had but lately formed an alliance; a temerity bordering on madness. All historians agree that the French, like the Spanish war, was of Buckingham's creating; and the motives which led to it would appear incredible, if the violence, profligacy, and folly of that man's character were not known. At the time when Charles married, by proxy, Henrietta of France, Buckingham had appeared at Paris to grace the festivity, and, by his showy superficial accomplishments, had attracted the admiration of the Queen of France herself. Having conducted Henrietta safely to England, he was preparing, doubtless in the spirit of ambitious gallantry, to return upon a new embassy; when Richelieu, the minister, himself a disappointed lover of the queen, caused a message to be sent him from France, declining the honour of his intended visit. Buckingham's rage at this knew no bounds, and, in a transport of passion, he swore that he would see the queen in spite of all the power of France. He also determined, if possible, to embroil the two kingdoms in war; and with this view he prevailed with Charles to dismiss the queen's French domestics, and encouraged the English ships to seize on those of France. But great as these provocations were, they failed in their object, which was to drive the French to a declaration of war. Upon this Buckingham persuaded the king openly to espouse the cause of the Huguenots, whose leader, the Duke de Soubise, was then in London. And the vain, shallow, impetuous favourite himself set sail with a hundred ships and seven thousand men to assist the Huguenots of Rochelle. Uninformed of his designs, however, the latter shut their gates against him. Instead of attacking the rich and defenceless isle of Oleron, Buckingham then bent his course to that of Rhé; and, after allowing the garrison of St Martyn to be well provisioned, he resolved to reduce it by famine. But his impatience soon led him to abandon this design; and attempting to storm the place without having made a breach in the defences, he was repulsed with the loss of two thirds of his force, and returned to England covered with disgrace. Destitute alike of capacity for war, of common sense and common vigilance, his conduct, throughout the whole of this expedition, was alternately that of an idiot and a madman. He did every thing that he ought not to have done; neglected every thing which it was his duty to do; attempted what was impossible or impracticable; sacrificed

sign of the lives of brave men at the shrine of his insane folly; Charles I. brought disgrace on the national arms; and prodigiously aggravated all the difficulties and embarrassments with which his master was then surrounded. Of all the popinjays ever hatched and feathered in a court, Buckingham was beyond all doubt one of the most mischievous as well as most unprincipled.

Well then might the king and his favourite tremble at the prospect of meeting a third parliament, after having squandered the money illegally extorted from a nation, now on the point of insurrection, on a war begun in the madness of profligacy, and productive only of disaster and shame. But, in the actual state of men's minds, it would have been hazardous to renew the experiment of raising money by the exercise of the prerogative alone. A third parliament was therefore summoned, and met on the 17th of March 1628. At the beginning of the session Charles plainly told them, that "if they should not do their duties, in contributing to the necessities of the state, he must, in discharge of his conscience, use those other means which God had put into his hands, in order to save that which the follies of some particular men might otherwise put in danger." Foreseeing that they might expect to be dismissed on the first disagreement with the king, the Commons proceeded with caution, yet relaxed nothing in vigour. The nation was now really suffering from the late arbitrary proceedings. They, therefore, began by remonstrating against arbitrary imprisonments and forced loans; after which, five subsidies, or £280,000, were voted to the king, a sum with which Charles declared himself well satisfied. The Commons, however, resolved not to pass this vote into a law, until they had obtained from the king a sufficient security that their liberties should no longer be violated as they had formerly been. With this view they framed a law which was called a *Petition of Right*, because it was only a confirmation of the ancient constitution, in which they collected all the arbitrary exertions of the prerogative which had taken place since the king's accession, and in particular complained of the grievances of forced loans, benevolences, taxes without consent of parliament, arbitrary imprisonments, billeting soldiers, and martial law. They made no pretensions to any unusual power or privileges; nor did they intend to infringe on the royal prerogative in any respect. They aimed only at securing those rights and privileges derived from their ancestors.

But the king, on his part, began plainly to show that he aimed at nothing less than absolute power. This most reasonable petition he did his utmost to evade, by repeated messages to the house, in which he offered his royal word that there should be no more infringements on the liberty of the subject. But these messages had no effect on the Commons. They knew how brittle such promises were without further security, and accordingly passed the bill. In the Lords an attempt was made to stultify the measure, by adding to a general declaration of the rights of property and person a clause to the effect that, in case the sovereign be, from absolute necessity, obliged to imprison a subject, "he shall be petitioned to declare that, within a *convenient time*, he shall and will express the cause of imprisonment, and will, upon cause so expressed, leave the prisoner to be tried by the common law of the land." But in a conference the Commons refused to annihilate their petition by such a compromise; the Lords then passed the bill, and nothing was wanting but the royal assent to give it the force of a law. Charles accordingly came to the House of Peers, sent for the Commons, and being seated in the chair of state, instead of giving the usual concise assent, said, "the king willeth that right be done according to the laws and customs of

the realm, and that the statutes be put into execution; that his subjects may have no cause to complain of any wrong or oppression contrary to their just rights and liberties, to the preservation whereof he holds himself in conscience as much obliged as of his own prerogative." Reign of Charles I.

This equivocal answer was highly resented. The Commons returned in very ill humour; and their indignation would undoubtedly have fallen on the unfortunate Catholics, had not the petition against that persecuted class of religionists already received a satisfactory answer. To give vent to their displeasure, therefore, they fell on Dr Mainwaring, who had preached, and, at the special command of the king, printed, a sermon, which was found to contain doctrines subversive of civil liberty. For these doctrines Mainwaring was sentenced to be imprisoned during the pleasure of the house, to be fined in £1000, to make submission and acknowledgment for his offence, to be suspended for three years, and declared incapable of holding any ecclesiastical dignity or secular office; and his book was ordered to be called in and burnt. But the session was no sooner ended than Mainwaring received a pardon, and was promoted to a living of considerable value; and some years afterwards he was raised to the see of St Asaph. Having dealt thus with Mainwaring, the Commons proceeded to censure Buckingham; and the storm of public indignation seemed ready to burst on his head, when it was diverted by the king's yielding to the importunities of parliament. He went to the House of Peers, and when he pronounced the usual form of words, "*Let it be law as is desired*," the house resounded with acclamations, which were re-echoed over all the country, and the bill for five subsidies immediately passed.

But the Commons were not yet done with the redress of grievances. They called for the abolition of a commission which had been recently granted to thirty-three officers of the crown for levying money by impositions or otherwise, "in which form or circumstance were to be dispensed with rather than the substance be lost or hazarded." They adverted to a scheme for introducing into England a thousand German horse, probably to aid in levying contributions; they again attacked Buckingham, against whom they were justly implacable; and they also asserted that the levying of tonnage and poundage without consent of parliament was a palpable violation of the ancient liberties of the people, and an open infringement of the petition of right so lately granted. To prevent a formal remonstrance on these subjects, the king suddenly prorogued the parliament on the 26th of June 1628.

The hand of an assassin soon rid the Commons of their enemy Buckingham. He was murdered on the 23d of August this same year, by one Felton, who had formerly served under him as a lieutenant. The king did not appear much concerned at his death, but retained an affection for his family throughout his whole lifetime. He desired also that Felton might be tortured, in order to extort from him a discovery of his accomplices; but the judges declared, that though that practice had been formerly very common, it was altogether illegal.

In 1629 the usual contentions between the king and his parliament were renewed. The great article on which the Commons broke with their sovereign, and which finally created in him a disgust at all parliaments, was their demands with regard to tonnage and poundage. The question at issue was, whether this tax could be levied without consent of parliament or not. Charles, supported by multitudes of precedents, maintained that it might; and the parliament, in consequence of their petition of right, asserted that it could not. But the Commons were resolved to support their rights.

They began with summoning before them the officers of

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the custom-house, to give an account of the authority by which they had seized the goods of those merchants who had refused to pay the duties of tonnage and poundage. The Barons of Exchequer were questioned with regard to their decrees on that head. The sheriff of London was committed to the Tower for his activity in supporting the officers of the custom-house. The goods of Rolles, a merchant, and member of the house, being seized on account of his refusal to pay the duties, complaints were made of this violence, as a breach of privilege. Charles, on the other hand, supported his officers in all these measures; and the breach between him and the Commons became every day wider. Sir John Eliot framed a remonstrance against tonnage and poundage, which he offered to the clerk to read; but the latter refused, and Sir John then read it himself. When the question was called for, the Speaker, Sir John Finch, said, that he had it in command from the king to adjourn, and to put no question; upon which he rose and left the chair. The whole house was in an uproar; the Speaker was pushed back, and forcibly held in the chair by Hollis and Valentine, till a short remonstrance was framed, and passed by acclamation. Papists and Arminians were now declared capital enemies to the commonwealth; those who levied tonnage and poundage were branded with the same epithet; and even the merchants who voluntarily paid these duties were declared betrayers of English liberty, and public enemies. The doors being locked, the gentleman-usher of the House of Lords, who was sent by the king, could get no admittance till this remonstrance was finished. By the king's order he took the mace from the table, which put an end to their proceedings; and, on the 10th of March, the parliament was dissolved. Some of the members were imprisoned and fined; but this severity served only to increase the general discontent, and point out the sufferers as proper leaders for the popular party.

Disgusted with parliaments, Charles now resolved to call no more; but finding himself destitute of resources, he was obliged to conclude a war which was begun without necessity, and conducted without glory. A treaty was signed with France on the 14th of April, and another with Spain on the 5th of November 1630, by which Charles bound himself to observe a neutrality with regard to the affairs of the Continent. In these treaties the Huguenots and the palatinate were equally abandoned. Charles, however, united with France in mediating between Sweden and Poland, in hopes of gaining the former to the cause of his brother-in-law. But although Gustavus espoused the cause of the German Protestants, and accepted of aid from Charles under the Marquis of Hamilton, he refused, when he had overrun Germany, to restore the palatinate, except on condition of its dependence upon himself. In short, the peace was as ignominious as the war had been disgraceful.

The king's conduct to his subjects cannot now therefore appear blameless, nor the general discontent without foundation. As if resolved to ruin himself utterly, and to forfeit any small degree of regard which his subjects still retained for him, Charles now set about making innovations in religion. Archbishop Laud had obtained a prodigious ascendancy over the king, and, by a superstitious attachment to fantastical ceremonies, led him into a conduct that proved fatal to himself and ruinous to the kingdom. The humour of the nation at that time inclined them to enthusiasm rather than superstition; and the ancient ceremonies which had been sanctified by the permission and practice of the first reformers, were barely tolerated in divine service. Yet Laud chose this time, in every respect the most unseasonable that could have been hit upon, for renewing the ceremonies of the fourth and

fifth century, when the Christian church was sunk in super-
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stition, and religion had been smothered under a cumbersome mass of unmeaning forms; and so openly were his projects avowed, that not only did the Puritans believe the church of England to be fast relapsing into the ancient faith, but even the court of Rome itself entertained hopes of regaining its former authority in this island, and, in order to quicken the zeal of Laud, twice offered him, in private, a cardinal's hat. He had just sense enough to decline a tender which, if accepted, would have instantly wrought his overthrow. But it must nevertheless be confessed, that if he hesitated openly to declare himself a Catholic, the genius of his religion was essentially identical with that of Rome. The same profound respect was exacted to the sacerdotal character; the same submission to the creeds and decrees of synods and councils; the same pomp and ceremony in worship; the same superstitious regard to days, postures, meats, and vestments. The communion table was removed from the middle of the area where it had hitherto stood in all churches except cathedrals, and placed at the east end, railed in, and denominated an altar, whilst the clergyman who officiated received the appellation of priest. All kinds of ornaments, especially pictures, were introduced; some of them copied from the mass-book. And the crucifix too, that perpetual consolation of all pious Catholics, and terror of all sound Protestants, was not forgotten on this occasion.

In return for the king's indulgence towards the church, Laud and his followers took care to magnify on every occasion the regal authority, and to treat with the utmost disdain all puritanical pretensions to a free and independent constitution. From this subjection, however, they took care to exclude themselves, insisting upon a divine and apostolical charter in preference to a legal and parliamentary one. The sacerdotal character was magnified as sacred and indefeasible; and all right to spiritual authority, or even to private judgment in spiritual subjects, was refused to profane laymen. Ecclesiastical courts were held by bishops in their own name, without any notice being taken of the king's authority; and Charles, though extremely jealous of every claim set up by popular assemblies, seemed rather to encourage than repress the encroachments of his clergy.

Meanwhile the king had changed his counsellors without changing his councils. In order to weaken the popular party, by creating suspicion and distrust of its chiefs, Charles, resorting to an expedient often adopted by princes, had chosen his ministers from the ranks of the patriots, in the hope of converting them into strenuous supporters of the prerogative which he was content to share with them. Nor was he mistaken in calculating the more immediate effects of this political apostacy. Sir Thomas Wentworth, now created Earl of Strafford, was appointed president of the council of York, deputy of Ireland, and chief counsellor of the king. Sir Dudley Digges became master of the rolls; Noy, attorney-general; and Littleton, solicitor-general. But the arch-apostate was Wentworth, a man distinguished by great force of character, dauntless courage, brilliant and commanding eloquence, extraordinary intellectual resources, unconquerable moral energy, and a fierce tumultuous ambition, which led him to trample without scruple or remorse upon every principle accounted most sacred and most binding on public men. In him the popular party lost one of its most powerful supporters, whilst despotism gained a formidable instrument, ready to revenge his own apostacy on the men he had deserted and betrayed, and to employ all his powers for the purpose of crushing those liberties of which he had been the most distinguished champion. This bold, bad man, remarkable alike in every aspect of his character, became the associate and

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Whilst Charles ruled without parliaments he ruled by the naked exercise of prerogative alone. He wanted money for the support of government; and he levied it, either by the revival of obsolete laws, or by violations of the rights and privileges of the nation. In the Star-chamber and High Commission unheard of severities were practised in order to support the present mode of administration, and suppress the rising spirit of liberty throughout the kingdom. Sir David Foulis was fined £5000 for dissuading a friend from compounding for knighthood. Prynne, a barrister, was condemned to be pilloried in two places, to lose his ears, to pay a fine of £5000, and to be imprisoned during life, for reviling stage plays, huntings, and festivals, and animadverting on the superstitions of Laud. Allison was ordained to pay £1000 to the king, to be publicly flogged, and to stand four times in the pillory, for reporting that the Archbishop of York had fallen into disgrace by asking toleration for the Catholics. Nor were these the only cases of the kind. Personal liberty was annihilated. Meanwhile tonnage and poundage continued to be levied by royal authority alone. The former arbitrary impositions were still exacted, and even new ones laid upon the different kinds of merchandise. The custom-house officers received orders from the council to enter into any house, warehouse, or cellar; to search any trunk or chest, and to break any bulk whatsoever, in default of the payment of customs. To exercise the militia, each county was assessed by edict of the council, in a certain sum for maintaining a muster-master appointed to that service. Compositions were openly made with recusants, and the toleration of the Catholic religion being sold, religion became a regular part of the revenue. A commission was also granted for compounding with such as possessed crown-lands on defective titles; and upon this iniquitous pretence large sums were exacted from the people, who chose rather to submit to this fraudulent imposition, than to have the precise nature of their titles and the state of their private affairs exposed to the world.

These arbitrary proceedings led to an occurrence which will be ever memorable in the history of English liberty. John Hampden had been rated at twenty shillings of ship-money for an estate he possessed in Buckinghamshire, which was assessed at a ship of four hundred and fifty tons, or four thousand five hundred pounds. The share of the tax which fell to Hampden was very small; so small, indeed, that the sheriff was blamed for setting so wealthy a man at so low a rate; but although the sum demanded was a trifle, the principle of the demand was essentially despotic. The judges, it is true, had declared that, in case of necessity, the king might impose the tax of ship-money, and that his majesty was the sole judge of that necessity. But after consulting the most eminent constitutional lawyers of the time, Hampden, undismayed by this judicial deliverance, refused to pay the few shillings at which he was assessed, and determined, rather than submit to the imposition, to incur the certain expense and eventual danger of bringing to a solemn hearing this great controversy between the crown and the people. The leading council against the writ was the celebrated Oliver St John, whilst the attorney-general and solicitor-general appeared for the crown. The case was argued during twelve days in the Exchequer Chamber, and the judges took a considerable time for deliberation. No one has ever doubted

that the law was clearly in favour of Hampden, and that the arguments of his counsel remained unanswered. The bench was, however, divided in opinion. Four of the twelve judges pronounced decidedly in his favour; a fifth took a middle course; and the remaining seven gave their voices in favour of the writ. The majority against him was, therefore, the narrowest possible; and when it is recollected that the judges held their situations only during the royal pleasure, and consequently were entirely dependent on the court, this decision may be regarded as in reality a victory. In this light it was considered at the time; and it certainly had the effect of awakening the public indignation against the arbitrary designs of the court, and the abominable prostitution of judicial authority by which these had been sanctioned and abetted. "The judgment," says Clarendon, "proved of more advantage and credit to the gentleman condemned, than to the king's service."

The decision of the Exchequer Chamber, however, had placed at the disposal of the crown the property of every man in England; whilst the abominable proceedings of the Star-chamber, which caused obnoxious individuals to be mutilated and sent to rot in dungeons, showed that the persons as well as the estates of all who ventured to oppose the crown were entirely at its mercy. What that mercy was will immediately be seen. Hampden, with some of his friends and connections, determined to quit England for ever, and to betake themselves across the Atlantic, to a settlement which a few persecuted Puritans had formed in the wilderness of Connecticut. Lords Saye and Brooke were the original projectors of this scheme of emigration; and Hampden, who had been early consulted respecting it, now resolved to withdraw himself beyond the reach of further persecution, having reason to dread the vengeance of the court for the resistance he had offered to its tyranny. He was accompanied by his kinsman Oliver Cromwell; and the cousins took their passage in a vessel which lay in the Thames, bound for North America. They were actually on board, when an order of council appeared, by which the ship was prohibited from sailing; and seven other ships, filled with emigrants, were also stopped by the same authority. "Hampden and Cromwell remained," says the writer from whom we have borrowed so much, "and with them remained the evil genius of the house of Stuart." (*Edinburgh Review*, vol. liv. p. 526.)

While the discontent produced by these arbitrary proceedings was at its height in England, and the people ready to break out in open rebellion, Charles thought proper to attempt setting up Episcopacy in Scotland. The canons for establishing a new ecclesiastical jurisdiction were promulgated in 1635, and were received without any external appearance of opposition, yet with great inward apprehension and discontent. But when the reading of the liturgy was first attempted in the cathedral church of St Giles in Edinburgh in 1637, it produced such a violent tumult that it was not thought safe to repeat the experiment. A universal combination against the religious innovations began immediately to take place; but Charles, as if obstinately bent on his own destruction, continued inflexible in his purpose, though he had nothing to oppose to the united force of the kingdom but a proclamation, in which he pardoned all past offences, and exhorted the people to be more obedient for the future, and to submit peaceably to the use of the liturgy. This proclamation accelerated the insurrection which had before been but slowly advancing. Four Tables, as they were called, were formed in Edinburgh; one consisting of nobility, another of gentry, a third of ministers, and the fourth of burgesses. The table of gentry was divided into many subordinate

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ones, according to the different counties. In the hands of the Four Tables the authority of the whole kingdom was placed. Orders were issued by them, and everywhere obeyed with the utmost regularity; and amongst the first acts of their government was the production of the Covenant. This famous instrument consisted of a renunciation of popery, formerly signed by James in his youth, and filled with many virulent invectives against that party. A bond of union or league followed, by which the subscribers obliged themselves to resist all religious innovations, and to defend each other against all opposition whatsoever. The Covenant was subscribed by people of all ranks and conditions. Few disapproved of it in their hearts, and still fewer dared openly to condemn it. The king's ministers and counsellors themselves were mostly of the same way of thinking; and none but persons accounted rebels to God, and traitors to their country, could withdraw themselves from so salutary and pious a combination.

The king now began to be seriously alarmed. He sent the Marquis of Hamilton, as commissioner, with authority to treat with the Covenanters; he required the Covenant to be renounced and recalled; and, as sufficient concessions on his part, he offered to suspend the canons and liturgy till they could be received in a fair and legal way, and so to model the High Commission that it should no longer give offence to his subjects. In answer to this demand, however, the Covenanters declared that they would sooner renounce their baptism than the Covenant; and they invited the commissioner himself to sign it. Hamilton returned to London; made another fruitless journey with new concessions to Edinburgh; returned again to London, and was immediately sent back with still more satisfactory concessions. The king was now willing to abolish entirely the canons, the liturgy, and the High Commission Court; he even resolved to limit greatly the power of the bishops, and seemed content if on any terms he could retain that order in the Church of Scotland. Further, he gave Hamilton authority to summon first an assembly, and then a parliament, where every national grievance should be redressed. But these tardy and reluctant concessions only showed the weakness of the king, and encouraged the malcontents to rise in their demands. The offer, however, of an assembly and a parliament, in which they expected to be entirely masters, was very willingly embraced by the Covenanters.

Perceiving the advantage which his enemies had reaped from their Covenant, Charles resolved to have one on his side also; and he ordered a bond to be drawn up for that purpose. It consisted of the same strenuous renunciation of popery with the other; and although the king did not approve of this, he thought proper to adopt it, in order to remove all the suspicions entertained against him. As the Covenanters, in their bond of mutual defence against all opposition, had been careful not to except the king, Charles also formed a bond, which was annexed to this renunciation, and expressed the subscribers' loyalty and duty to his majesty. But the Covenanters perceiving that this new Covenant was only meant to weaken and divide them, received it with the utmost scorn and detestation; and proceeded without delay to model the assembly from which such great achievements were expected.

This assembly met at Glasgow in 1638. A firm determination had been entered into of utterly abolishing Episcopacy; and, as preparatory thereto, there was laid before the presbytery of Edinburgh, and solemnly read in all the churches of the kingdom, an accusation against the bishops, as guilty, all of them, of heresy, simony, bribery, perjury, cheating, incest, adultery, fornication, common swearing, drunkenness, gaming, breach of the sabbath, and every other crime which had occurred to the accusers.

The bishops sent a protest, declining the authority of the assembly; the commissioner too protested against that court, as illegally constituted and elected, and in his majesty's name dissolved it. This measure was foreseen, and little regarded. The court still continued to sit and do business. All the acts of assembly since the accession of James to the crown of England were, upon very reasonable grounds, declared null and invalid. The acts of parliament which affected ecclesiastical affairs were on that very account supposed to have no authority. And thus the whole fabric which James and Charles, in a long course of years, had been rearing with much care and policy, fell at once to the ground. The Covenant likewise was ordered to be signed by every one, under pain of excommunication.

In 1639 the Covenanters prepared in earnest for war. The Earl of Argyll, though he long seemed to temporize, at last embraced the Covenant, and became the chief leader of that party. The Earls of Rothes, Cassillis, Montrose, Lothian, the Lords Lindesay, Loudoun, Yester, and Balmerino, also distinguished themselves. Many Scottish officers had acquired reputation in the German wars, particularly under Gustavus; and these were invited over to assist their country in its present necessity. The command was intrusted to Leslie, a soldier of experience and ability. Forces were regularly enlisted and disciplined; arms were commissioned and imported from foreign countries; a few castles which belonged to the king, being unprovided with provisions, ammunition, and garrisons, were soon seized; and the whole country, except a small part under the Marquis of Huntly, who still adhered to the king, fell into the Covenanters' hands, and was soon put in a tolerable state of defence.

Charles, on the other hand, was not deficient in endeavours to oppose this formidable combination. By regular economy he had not only paid all the debts contracted in the French and Spanish wars, but had amassed a sum of £200,000, which he had reserved for any sudden exigency. The queen, who had great interest with the Catholics, both from sympathy of religion, and from the favours and indulgences which she had been able to procure them, now employed her credit in persuading them that it was reasonable to give large contributions, as a mark of their duty to the king, during this urgent necessity; and thus, to the great scandal of the Puritans, a considerable supply was raised. The king's fleet also was formidable and well supplied. Having put five thousand land forces on board, he intrusted the command to the Marquis of Hamilton, who had orders to sail for the Frith of Forth, and cause a diversion by occupying the forces of the malcontents. An army of near twenty thousand foot and three thousand horse was meanwhile levied, and put under the command of the Earl of Arundel, a nobleman of great family, but distinguished for neither military nor political abilities. The Earl of Essex, a man of strict honour, and extremely popular, especially among the soldiery, was appointed lieutenant-general; and the Earl of Holland was made general of the horse. The king himself joined the army, and summoned all the Peers of England to attend him. The whole had the appearance of a splendid court rather than a military armament, and in this state the army arrived at Berwick.

The Scottish force was equally numerous with that of the king, but inferior in cavalry. The officers had more experience; and the soldiers, though ill disciplined and armed, were animated, as well by the national aversion to England, and the dread of becoming a province of their old rival, as by that religious enthusiasm which was the occasion of the war. Yet so prudent were their leaders, that they immediately sent very submissive messages to the

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Rei of king, and craved leave to be admitted to a treaty. Charles, as usual, took the worst possible course. He concluded a sudden pacification, in which it was stipulated, that he should withdraw his fleet and army; that within forty-eight hours the Scots should dismiss their forces; that the king's forts should be restored to him, his authority acknowledged, and a general assembly and parliament immediately summoned, in order to compose all differences. But this peace was not of long duration. Charles could not prevail on himself to abandon the cause of Episcopacy, and secretly intended to seize every favourable opportunity to recover the ground he had lost. The assembly, on the other hand, proceeded with the utmost vigour and determination. They voted Episcopacy to be unlawful in the church of Scotland; they stigmatized the canons and liturgy as popish; and they denominated the High Commission tyranny. The parliament, which sat after the assembly, advanced pretensions which tended to diminish the civil power of the monarch; and they were proceeding to ratify the acts of assembly, when, by the king's instructions, Traquair, the commissioner, prorogued them. By reason of these claims, which might have easily been foreseen, the war recommenced the same year.

No sooner had Charles concluded the peace, however, than he found himself obliged to disband his army from want of money; and as the soldiers had been held together merely by mercenary views, it was not possible, without great trouble, expense, and loss of time, to re-assemble them. The Covenanters, on the contrary, in dismissing their troops, had been careful to preserve nothing but the appearance of a pacification. The officers had orders to be ready on the first summons; the soldiers were warned not to think the nation secure from an English invasion; and the religious zeal which animated all ranks of men made them immediately fly to their standards as soon as the trumpet of war was sounded by their spiritual and temporal leaders.

In 1640, however, the king managed to draw an army together; but finding himself unable to support them, he was obliged to call a parliament after an intermission of about eleven years. As the sole object of the king in calling this parliament was to obtain a supply, and the only reason they had for attending was to procure a redress of grievances, much harmony could scarcely be expected. The king accordingly insisted for money, and the parliament expatiated on their grievances, till a dissolution ensued; and, as if to render this measure still more unpopular, the king permitted the Convocation to sit after the dissolution;—a practice of which there had been very few examples since the reformation, and which was now deemed exceedingly irregular. Besides granting a supply to the king from the spiritualities, the Convocation, jealous of innovations similar to those which had taken place in Scotland, imposed an oath on the clergy and the graduates in the Universities, binding them to maintain the government of the church, by archbishops, bishops, deans, chapters, and otherwise, as by law established. These steps were deemed illegal, because not ratified by consent of parliament; and the oath became a subject of general ridicule.

Disappointed of parliamentary subsidies, the king was obliged to have recourse to other expedients. The ecclesiastical subsidies offered a considerable resource; and it seemed but just that the clergy should contribute to the expense of a war which they had been mainly instrumental in raising. Charles borrowed money from his ministers and courtiers; and so urgent were his wants, that above £300,000 were subscribed in a few days. Attempts were made to levy a forced loan from the citizens; but these were repelled by the spirit of liberty, which had now become unconquerable. A loan of £40,000 was, however,

extorted from the Spanish merchants who had bullion in the Tower. Coat and conduct money for the soldiery was also levied on the counties; all the pepper was bought up from the East India Company upon trust, and sold at a great discount for ready money; and an infamous scheme was proposed for coining two or three hundred thousand pounds of base money. Such were the extremities to which Charles was now reduced. The fresh difficulties which were every day raised with regard to the payment of ship-money, obliged him to exert continual acts of authority, and augmented extremely the discontents of the people, while his indigence and necessities continued undiminished.

These expedients, however, enabled the king, though with great difficulty, to set in motion an army, consisting of 19,000 foot and 2000 horse. The Earl of Northumberland was appointed general; the Earl of Strafford, who had been recalled from Ireland, lieutenant-general; and Lord Conway general of the horse. A small fleet was thought sufficient to serve the purposes of this expedition. The Scottish forces, though somewhat superior, were sooner ready than the king's army, and marched to the borders of England. But notwithstanding their warlike preparations, the Covenanters still held the most submissive language to the king; having entered England, they said, with no other design than to obtain access to the king's presence, and lay their humble petition at his royal feet. At Newburn-upon-Tyne they were opposed by a detachment of four thousand five hundred men under Conway, who seemed resolved to dispute the passage of the river. The Scots first entreated them civilly not to interrupt them in their march to their gracious sovereign; and then attacking the detachment with great bravery, killed several, and chased the remainder from the ground. A panic now seized the whole English army; the forces at Newcastle fled immediately to Durham; and not thinking themselves safe there, they abandoned the town, and retreated into Yorkshire.

The Scots continuing to advance, dispatched messengers to the king, who had by this time arrived at York. They took care to redouble their expressions of loyalty, duty, and submission to his person; and they even made apologies for their late victory. Charles was in a very distressed condition; and, in order to prevent the further advance of the Scots, he agreed to a treaty, and named sixteen English noblemen to meet with eleven Scottish commissioners at Rippon. Strafford, upon whom, by reason of Northumberland's sickness, the command of the army had devolved, advised Charles rather to put all to the hazard than to submit to the terms which he foresaw would be prescribed. He urged him to push forward, to attack the Scots, and to bring the affair to a quick decision. If he were ever so unsuccessful, nothing worse could befall him than what he would certainly be exposed to from his inactivity; and, to show how easily this project might be executed, he ordered an assault to be made on some quarters of the Scots, and gained some advantage over them. This energetic advice Charles had not resolution to adopt. He resolved to summon a council of the peers; and as he foresaw that they would advise him to call a parliament, he told them in his first speech that he had already taken that resolution. Meanwhile, in order to subsist both armies (for the king was obliged to pay his enemies, in order to save the northern counties), Charles wrote to the city, desiring a loan of £200,000; and the peers assembled at York joined in the same request.

The parliament met in November 1640. The House of Commons had never been observed to be so numerous; and, in order to strike a blow at once against the court, they began with the impeachment of the Earl of Strafford. That nobleman, who was considered as prime minister, both on account of the credit he possessed with his mas-

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ter, and his own uncommon vigour and capacity, had incurred the hatred of the three kingdoms. The Scots looked upon him as the capital enemy of their country. He had engaged the parliament of Ireland to advance large subsidies to be employed in a war against them; he had levied an army of nine thousand men, with which he had menaced their western coast; he had obliged those who lived under his government to renounce the solemn league and covenant; and he had governed Ireland, first as deputy, and then as lord-lieutenant, during eight years, with great vigilance, activity, and energy, but with very little popularity, owing to the severities he had exercised. In a nation so averse to the English government and religion, these qualities were sufficient to draw upon him the public hatred. His manners, besides, were at bottom haughty, rigid, and severe; and no sooner did adversity begin to seize him, than this concealed hatred blazed up at once, and the Irish parliament used every expedient to aggravate the charge against him. Nor was this all. The universal discontent which prevailed throughout England was all pointed against the Earl of Strafford; and for this reason, that he was the minister of state whom the king most favoured and trusted. His extraction was honourable, his paternal fortune considerable; yet envy attended his sudden and great elevation, and his former associates in popular counsels, finding that he owed his advancement to the desertion of their cause, denounced him as the arch-apostate of the commonwealth, whom it behoved them to sacrifice as a victim to public justice.

From such causes nothing else could be expected than what really happened. Articles of impeachment were exhibited against Strafford, and this proceeding was followed by a bill of attainder. The king had induced Strafford to leave the army by a promise of protection, and an assurance that not a hair of his head should be hurt; but he soon learnt to his cost, that in neglecting the scriptural admonition, "Put not your faith in princes," he had rushed into the jaws of destruction. It was not without extreme difficulty, however, that the king could be brought to consent to the sacrifice of his favourite minister. He came to the House of Lords, where he expressed his resolution never to employ Strafford again in any public business; but with regard to the treason of which that minister was convicted, he professed himself totally dissatisfied. The Commons, however, voted it a breach of privilege for the king to take notice of any bill depending before the House. Charles did not seem to perceive that his attachment to Strafford was the chief motive for the bill; and that the greater the proof he gave of this attachment to his minister, the more inevitable did he render his destruction. The House of Lords were intimidated, by popular violence, into passing the bill of attainder against the unfortunate earl; and the same battery was next employed to force the king's assent. The populace flocked about Whitehall, and accompanied their demand of justice with loud clamours and open menaces. A thousand reports of conspiracies, insurrections, and invasions, were spread abroad. On whatever side the king cast his eyes he saw no resource nor security. All his servants, consulting their own safety rather than their master's honour, declined interposing with their advice between him and his parliament; the queen, terrified at the appearance of so great a danger, pressed Charles, with tears, to satisfy his people in this demand, which it was hoped would finally content them; Archbishop Juxon alone had the courage to advise him, if he did not approve of the bill, by no means to consent to it. At last, after the most violent anxiety and doubt, Charles granted a commission to four noblemen, in his name, to give the royal assent to the bill; flattering himself, that as neither his will was consenting to the deed,

nor his hand immediately engaged in it, he was free from the guilt which attended this base and ungrateful act.

That Strafford, on general grounds, perhaps, merited his fate, may be more easily conceded than the legality or justice of the proceedings which issued in his condemnation and death. The articles of impeachment exhibited against him respected his conduct as president of the Council of the North, as deputy of Ireland, and as commander-in-chief in England; and four months were employed by the managers in framing the accusation, so as, if possible, to entangle him in the meshes of treason. But he baffled, with wonderful ability, all the arguments of his accusers, whom he met and overthrew on every point; nor was the evidence produced against him at all sufficient to establish the charge of absolute treason, or to warrant the bill of attainder which was subsequently introduced. He was convicted of that constructive or accumulative species of treason, which, once admitted into the criminal jurisprudence of any country, must, in seasons of agitation and excitement, place the life of every man in it at the disposal of the ruling powers. He was sentenced to death in virtue of an *ex post facto* law, and fell the victim of popular odium, if not of party vengeance. It has indeed been said, that the proceedings against Strafford were justified by that which alone justifies capital punishment, or warrants the ravages committed in war, namely, by the public danger. But, even on this ground, it was incumbent on his accusers to show, first, that there was such a pressing and urgent danger as to justify an act of attainder; and, secondly, that the sacrifice demanded was the only mode in which such danger could be obviated or removed. Neither of these points, however, was established, or attempted to be established. The high tribunal before which Strafford was tried, convicted, and condemned, never seems to have thought of setting forth its own fears for the public weal, whether well or ill founded, as the sole and only measure of the justice of its procedure; they went upon grounds totally different, and sought to give a legal sanction to a judgment, for which no better defence can now be devised than the plea of necessity. And had they followed a different course, their conduct would have been at once absurd and inconsistent; for where there is an urgent or admitted necessity, that, from the nature of things, supersedes all ordinary principles of law, all questions of evidence, all considerations of guilt or of innocence; and where, as in this case, a formal investigation and trial have been gone into, it converts them into an absolute and intolerable mockery. The execution of Strafford, therefore, may be more easily palliated than defended. As a revolutionary measure, it may have been expedient; considered as a judicial act, it seems to have been a flagrant violation of the most sacred principles of law and justice.

These commissioners were empowered to give the royal assent to a bill yet more fatal to the king, which provided that the present parliament should not be dissolved, prorogued, or adjourned, without their own consent. By this last bill Charles perpetuated the power which had already become uncontrollable. The reason of this extraordinary step was, that the Commons, from policy rather than necessity, had resorted to the expedient of paying the two armies by borrowing money from the city; and these loans they were to be afterwards repaid by taxes levied on the people. But at last the citizens began to start difficulties with regard to a further loan which was demanded. "We make no scruple of trusting the parliament," said they, "were we certain that the parliament was to continue till our repayment. But, in the present precarious situation of affairs, what security can be given us for our money?" In order to obviate this objection, the above-mentioned bill was sud-

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denly brought in, and having passed both houses with great rapidity, was at last brought to the king, who, being oppressed with grief on account of the unhappy fate of Strafford, did not perceive the effect of it until it was too late.

Soon after the impeachment of Strafford, Laud was accused of high treason, and committed to custody; and to avoid a similar fate Lord Keeper Finch and Secretary Windebank fled, the one into Holland, the other into France. The house then instituted a new species of crime, which was termed *delinquency*; and persons who had acted under the king or by his authority during the late military operations were now called *delinquents*. Many of the nobility and gentry of the nation, while exerting what they considered as the legal powers of magistracy, thus found themselves unexpectedly involved in this new and sufficiently vague offence. The Commons, however, reaped great advantage from their invention;—they disarmed the crown, established the maxims of rigid law and liberty, and spread the terror of their own authority. All the sheriffs who had formerly exacted ship-money, though by the king's express command, were now declared delinquents. The farmers and officers of the customs who had been employed during so many years in levying tonnage, poundage, and other imposts laid on without the authority of parliament, were likewise denominated delinquents, and were afterwards glad to compound for a pardon by paying £150,000. Every sentence of the Star Chamber and High Commission Courts, which from their very nature were arbitrary and oppressive, underwent a severe scrutiny; and all who had concurred in such sentences were voted liable to the penalties of law. No minister of the king, no member of the council, was safe. The judges who had formerly given judgment against Hampden for refusing to pay ship-money were accused before the Peers, and obliged to find security for their appearance when required. Berkeley, a judge of the King's Bench, was seized by order of the house, even when sitting in his court. The sanction of the Lords and Commons, as well as that of the king, was declared necessary for the confirmation of ecclesiastical canons.

In a word, the constitution was new-modelled, in as far as that may be said to have been done by reforming abuses and striking terror into all those who had profited by them, or had in any manner of way been accessory to the arbitrary proceedings of the court. And during the first period of the transactions of this parliament, their merits so greatly overbalanced their defects and errors, as to entitle them to the admiration of all lovers of liberty. Not only were former abuses remedied, and grievances redressed; provision was also made, by excellent laws, against a recurrence of the like evils. And if the means by which they accomplished such great ends savoured often of artifice, sometimes of violence, it is to be considered that revolutions in government cannot always be effected by mere force of argument and reasoning; and that, factions being once excited, men can neither so certainly regulate the tempers of others, nor control their own, as to guard against all excesses.

The king having promised to pay a visit this summer to his subjects in Scotland, in order to settle their government, the English parliament was very importunate with him to lay aside that journey; but they could not prevail with him so much as to delay it. Failing in this, they appointed a small committee of both houses to attend him; in order, as was pretended, to see the articles of pacification executed, but in reality to watch the motions of the king, and to extend still further the ideas of parliamentary authority. This committee consisted of the Earl of Bedford, Lord Howard, Sir Philip Stapleton, Sir William Armyne, Nathaniel Fiennes, and John Hampden.

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Charles arrived in Scotland on the 14th of August 1641, intending, it is said, to give full satisfaction if possible to the people of that country. And some useful changes were in reality made. The bench of bishops and the lords of articles were abolished; it was provided that no man should be created a Scottish peer who possessed not ten thousand merks, above £500 sterling, of annual rent in the kingdom; a law for triennial parliaments was likewise passed; it was resolved that the last act of every parliament should be to appoint the time and place for holding the parliament next ensuing; and the king was also deprived of the power he had formerly exercised of issuing proclamations which enjoined obedience under the penalty of treason. But the hardest blow given to the royal authority was an article which provided that no member of the privy council, no officer of state, none of the judges, should be appointed without the advice and approbation of parliament. Charles even agreed to deprive of their seats four judges who had adhered to his interests; and their place was supplied by others more agreeable to the ruling party. Several of the Covenanters were also sworn of the privy council; and all the ministers of state, counsellors, and judges, were by law to hold their offices during life or good behaviour. While in Scotland, the king conformed himself to the established church; he bestowed pensions and preferments on Henderson, Gillespie, and other popular preachers; and he practised every artifice to soften, if not to gain, his greatest enemies. The Earl of Argyll was created a Marquis, Lord Loudon an Earl, and Leslie was raised to the peerage by the title of Lord Leven. But though Charles thus heaped favours on his enemies with a prodigal hand, they were not satisfied, believing that all he did proceeded from artifice and necessity; whilst some of his friends were disgusted, and thought themselves ill rewarded for their past services. The king was manifestly playing a part, and he played it ill, because he overacted his assumed character.

Argyll and Hamilton, being seized with an apprehension, real or pretended, that the Earls of Crawford and Cochrane meant to assassinate them, left the parliament suddenly, and retired into the country; but, upon receiving assurances of safety, they returned in a few days. This event, which had no visible result in Scotland, was commonly denominated the Incident; but it was attended with very serious consequences in England. The English parliament immediately took the alarm. They insinuated that the Malignants, as they called the king's party, had laid a plot to murder the godly in both kingdoms; and having applied to Essex, whom the king had left general of the south of England, he ordered a guard to attend them.

In the mean time a rebellion broke out in Ireland, with circumstances of unparalleled atrocity, bloodshed, and devastation. By the judicious conduct of James the old Irish had been subdued, and proper means taken for securing their subjection in time coming; but their ancient animosity still remained, and only wanted an occasion, or rather pretext, to burst forth. And this, according to the received account, was furnished by the circumstances of the times and the weakness of the government.

Roger More, a gentleman descended from an ancient Irish family, but of narrow fortune, first formed the project of expelling the English, and asserting the independence of his native country. He went secretly from chieftain to chieftain, and roused up every latent principle of discontent. He maintained a close correspondence with Lord Macguire and Sir Phelim O'Neale, the most powerful of the old Irish chiefs; and, by his persuasions, soon engaged not only them, but the most considerable persons of the nation, in a conspiracy. It was also hoped

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that the English of the Pale, as they were called, or the old English planters, who were all Catholics, would afterwards join the party which proposed to restore their religion to its ancient splendour and authority. The design was, that Sir Phelim O'Neale and the other conspirators should begin an insurrection on a given day throughout the provinces, and attack all the English settlements; and that, on the very same day, Lord Macguire and Roger More should surprise the castle of Dublin. They fixed on the beginning of winter for the commencement of the insurrection, that there might be more difficulty in transporting forces from England. Succours of men and supplies of arms were expected from France, in consequence of a promise to that effect made them by Richelieu; and many Irish officers who had served in the Spanish army expressed their readiness to lend their aid as soon as they saw an insurrection commenced by their Catholic brethren. The news which every day arrived from England of the fury expressed by the Commons against Catholics struck terror into the Irish nation, and stimulated the conspirators to execute their fatal purpose, by assuring them of the concurrence of their countrymen.

From the propensity discovered by the Irish to revolt, it was deemed unnecessary as well as dangerous to trust the secret to many; and, though the day appointed drew near, no discovery, it is said, had yet been made by government. The king, indeed, had received information from his ambassadors, that something was in agitation among the Irish in foreign parts; but though he gave warning to the administration in Ireland, his intelligence was entirely neglected. They were awakened from their security only the day before the commencement of hostilities. The castle of Dublin, by which the capital was commanded, contained arms for ten thousand men, with thirty-five pieces of cannon and a proportional quantity of ammunition; yet this important place was guarded by no greater force than fifty men, and even they did their duty negligently. Macguire and More were already in town with a numerous band of retainers; others were expected in the course of the night; and next morning they were to enter on what seemed an easy enterprise, the surprisal of the castle. But O'Connolly, an Irishman and a Protestant, discovered the conspiracy. The justices and council immediately fled to the castle, and reinforced the guards. The city was alarmed, and the Protestants prepared for defence. More escaped, but Macguire was taken; and Mahon, one of the conspirators, being likewise seized, first discovered to the justices the project of a general insurrection.

But though O'Connolly's discovery saved the castle from a surprise, Mahon's confession came too late to prevent the intended insurrection. O'Neale and his confederates had already taken arms in Ulster. The houses, cattle, and goods of the English were first seized. Those who heard of the commotions in their neighbourhood, instead of deserting their habitations, and assembling together for mutual protection, remained at home in hopes of defending their property, and thus fell separately into the hands of their enemies. A universal massacre now commenced, accompanied with circumstances of unequalled barbarity. No age, no sex, no condition, was spared. In the frenzy of this bloody tragedy, every ordinary tie was broken, and death dealt by the hand from which protection was implored and expected. All the tortures which wanton cruelty could devise, all the lingering pains of body, all the anguish of mind, all the agonies of despair, could not satiate revenge excited without injury, and cruelty derived from no cause. Enormities, indeed, were committed, which, though attested by undoubted evidence, appear almost incredible. The stately buildings or commodious habitations of the planters, as if upbraiding the sloth and igno-

rance of the natives, were consumed with fire, or laid level with the ground; whilst the miserable owners, shut up in their houses, and preparing for defence, perished in the flames, together with their wives and children; thus affording a double triumph to their insulting foes. If anywhere a number assembled together, and resolved to oppose the assassins, they were disarmed by capitulations and promises of safety, confirmed by the most solemn oaths; but no sooner had they surrendered, than the rebels, with perfidy equal to their cruelty, made them share the fate of their unhappy countrymen. Others tempted their prisoners, by the love of life, to embroil their hands in the blood of friends, brothers, or parents; and having thus rendered them accomplices in their own guilt, gave them that death which they sought to shun by deserving it.

The barbarities by which Sir Phelim O'Neale and the Irish in Ulster signalized their rebellion may be imagined from this faint description. More, shocked at the recital of such enormities, flew to O'Neale's camp; but he found that his authority, though sufficient to excite the Irish to a rebellion, was too feeble to restrain their inhumanity. Soon afterwards he abandoned the cause, and retired to Flanders. From Ulster the flames of rebellion diffused themselves in an instant over the other three provinces of Ireland. In all places death and slaughter were common, though the Irish in some provinces pretended to act with moderation and humanity. But barbarous indeed was their humanity. Not content with expelling the English from their houses, they stripped them of their very clothes, and turned them out naked and defenceless to all the severities of the season; and the heavens, as if conspiring with the wrath of man against that unhappy people, were armed with cold and tempest unusual to the climate, and destroyed what the sword had spared. By some computations, the number of those who perished by all these cruelties is estimated at a hundred and fifty thousand; by the most moderate, forty thousand are calculated to have lost their lives; but even this estimate is in all probability exaggerated.

The English of the Pale, who were not probably at first in the secret, pretended to condemn the insurrection, and to detest the barbarity with which it was accompanied; and by their earnest protestations they engaged the justices to supply them with arms, which they promised to employ in defence of government. But the interests of religion were found to have more influence over them than a regard to duty and the peace of their country. They chose Lord Gormonstone as their leader; and, joining the old Irish, rivalled them in acts of cruelty towards the English Protestants. Besides many smaller bodies dispersed over the kingdom, the main army of the rebels amounted to twenty thousand men, and threatened Dublin with an immediate siege. Both the English and Irish rebels pretended authority from the king and queen, but especially the latter, for their insurrection; and they affirmed that the cause of their taking arms was to vindicate the royal prerogative, now invaded by the puritanical parliament. Sir Phelim O'Neale having, it is said, found a royal patent in the house of Lord Caulfield, whom he had murdered, tore off the seal, and affixed it to a commission which he had previously forged for himself.

The king received intelligence of this insurrection while in Scotland, and immediately communicated the disastrous tidings to the Scottish parliament; expressing a hope that, as there had all along been an outcry against popery, the nation would now, when that religion was appearing in its blackest colours, support him vigorously in the suppression of it. But if he was sincere in this request, which may not uncharitably be doubted, the Scots were not dis-

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posed to give so serious a pledge without due deliberation. Considering themselves now as secured in the enjoyment of their rights, and conceiving hopes from the present distresses of Ireland, they resolved to ascertain precisely the ground on which succours were demanded, before consenting to grant them. Except dispatching a small body of forces to support the Scottish colonies in Ulster, the utmost length they would go, therefore, was to agree to send commissioners to London, in order to treat with the parliament. The king accordingly found himself obliged to have recourse to the English parliament, and to depend on their assistance for a supply. He told them that the insurrection was not, in his opinion, the result of any rash enterprise, but of a preconcerted conspiracy against the crown of England. To their care and wisdom, therefore, he said, he committed the conduct and prosecution of the war, which, in a cause so important to national and religious interests, must of necessity be immediately begun and vigorously pursued. These words are fair-seeming, and it would be cruel to load the memory of an unfortunate prince with unjust reproach, or even ill-founded suspicion. But the impartiality of history compels us reluctantly to admit that there are grounds for charging the king with a guilty foreknowledge of what was designed and perpetrated in Ireland. The suddenness of his visit to Scotland, and the time chosen for undertaking it; his whole conduct in that country, particularly in at once making concessions at utter variance with the principles of his government and the integrity of his prerogative, which he had risked a civil war to preserve entire, and in heaping favours on his bitterest enemies; his new-born zeal against popery, which he had been so long covertly labouring to introduce; the criminal intrigues of the queen and those about her person, of which he could scarcely be altogether ignorant; the known deceit and duplicity of his own character; the strange inaction of the public functionaries in Ireland, even after they were apprized of the danger, to say nothing of the deaf ear they had turned to many previous hints that danger was brewing, and some sudden explosion contemplated; the absence of all proof of the fraud alleged to have been committed by O'Neale in regard to the royal patent said to have been found in the house of Lord Caulfield;—these, and many other circumstances that might be mentioned, seem to establish, first, that Charles had some very particular and urgent reasons for visiting Scotland at this time; secondly, that while there he acted a part which is only explicable on the supposition that he had a secret design to cover by it; thirdly, that such an impression seems to have been general at the time; and, lastly, that there are circumstances connected with this atrocious rebellion which have never been explained in such a manner as to vindicate the king's memory from the suspicion of at least guilty knowledge.

The English parliament, now re-assembled, discovered in each vote the same dispositions in which they had separated. By the difficulties and distresses of the crown, the Commons, who alone possessed the power of supply, had aggrandized themselves; and some were not sorry that the Irish rebellion had succeeded, at such a critical juncture, to the pacification in Scotland. An expression of the king's, by which he committed to them the care of Ireland, was immediately laid hold of, and interpreted in the most unlimited sense. On other occasions the Commons had been gradually encroaching on the executive power of the crown; but in regard to Ireland they now at once assumed it as if it had been delivered over to them by a regular assignment. They levied money under pretence of the Irish expedition, but reserved it for other purposes; they took arms from the king's magazines, but

reserved them for more immediate use. Yet though no forces were for a considerable time sent over to Ireland, and very little money remitted during the extreme distress of that kingdom, so strong was the attachment of the people to the Commons, that the fault was never imputed to persons whose votes breathed nothing but destruction and death to the Irish rebels.

In the meanwhile it was resolved to frame a general remonstrance on the state of the kingdom; and the committee, which at the meeting of the parliament had been chosen for that purpose, were commanded to finish their undertaking. The king returned from Scotland on the 25th of November 1641, and was received in London with shouts and acclamations by the people. Sir Richard Gournay, the lord-mayor, had promoted these favourable dispositions, and persuaded the populace, who had so lately insulted the king, and who so soon after made war upon him, to show these marks of respect. But all the pleasure which Charles had reaped from this reception was soon damped by the remonstrance of the Commons, which was presented to him, accompanied with a petition of similar import. The bad counsels which he had followed were there complained of; his concurrence in the Irish rebellion was plainly insinuated; the scheme laid for the introduction of popery and superstition was inveighed against; and, as a remedy for all these evils, the king was desired to intrust every office and command to persons in whom his parliament should see cause to confide. To this bitter remonstrance Charles found it necessary to make a civil reply. He knew that the public confidence was at that time denied to his ministers, more especially to such of them as had deserted the public cause; and that whilst men detested the servile insolence of Williams, the reckless levity of Digby, and the unblushing infamy of Saville, their faith and hope were strong in the inflexible virtues of Hampden, the mild integrity of Kimbolton, the ardent patriotism of Hollis, and the cool sagacity of Pym.

From this period the proceedings of the Commons became bolder, and more determined and violent. Finding themselves likely to be opposed by the nobility, who saw that their own degradation would speedily follow that of the crown, they openly told the Upper House that "they themselves were the representatives of the whole body of the kingdom, and that the Peers were nothing but individuals, who held their seats in a particular capacity; and therefore, if their Lordships would not consent to acts necessary for the preservation of the people, the Commons, together with such of the Lords as were more sensible of the danger, must join together and represent the matter to his majesty." Every method of alarming the country was now put in practice. Affecting continual fears of destruction to themselves and to the whole nation, they excited the people by never-ceasing inquiries concerning conspiracies, by reports of insurrections, by alleged rumours of invasion from abroad, and by discoveries of dangerous combinations at home. When Charles dismissed the guard which had been ordered them during his absence, they complained; and, on his promising them a new guard under the command of the Earl of Lindesay, they declined the offer. They ordered halberds to be brought into the hall where they assembled, and thus armed themselves against those conspiracies with which they pretended they were hourly threatened. During this time several reduced officers and young gentlemen of the inns of court offered their service to the king; and between them and the populace there occurred frequent skirmishes, which ended not without bloodshed. By way of reproach, these gentlemen gave the rabble the name of *Roundheads*, on account of their short cropped hair; whilst the latter distinguished their

Reign of Charles I. opponents by the name of *Cavaliers*; and thus the nation was furnished with party names, under which the factions might rendezvous and signalize their mutual hatred.

These tumults continued to increase about Westminster and Whitehall. The cry against the bishops continually resounded; and being easily distinguishable by their habit, as well as objects of violent hatred to all the sectaries, they were exposed to the most outrageous insults. In these circumstances, the Archbishop of York, having been abused by the populace, hastily called a meeting of his brethren; and by his advice a protestation was drawn up and addressed to the king and the House of Lords, setting forth, that though they had an undoubted right to sit and vote in parliament, yet in coming thither they had been menaced and assaulted by the multitude, and could no longer with safety attend their duty in the House; for which reason they protested against all laws, votes, and resolutions, as null and invalid, which should pass during the time of their forced absence. This ill-timed protestation was signed by twelve bishops, and communicated to the king. As soon as it was presented to the Lords, that house desired a conference with the Commons, whom they informed of this unexpected protestation. An impeachment of high treason was immediately sent up against the bishops, as endeavouring to subvert the fundamental laws, and to invalidate the authority of the legislature; and on the first demand they were sequestered from parliament, and committed to custody. No man in either house ventured to speak a word in their vindication. One individual alone remarked, that he did not believe them guilty of high treason; he only thought they were stark mad, and therefore desired that they might be sent to Bedlam.

This was a fatal blow to the royal interest, and it was aggravated by the imprudence of the king himself. Charles had long suppressed his resentment, and only strove to gratify the Commons by the greatness of his concessions; but finding all his compliances unavailing, he now gave orders to Herbert, the attorney-general, to enter an accusation of high treason, in the House of Peers, against Lord Kimbolton and five commoners, Sir Arthur Hazlerig, Hollis, Hampden, Pym, and Strode. The articles charged them with traitorously endeavouring to subvert the fundamental laws and government of the kingdom, to deprive the king of his regal power, and to impose on his subjects an arbitrary and tyrannical authority; with inviting a foreign army to invade the kingdom; with aiming at subverting the very right and being of parliaments; and with actually raising and countenancing tumults against the king. Men had scarce leisure to wonder at the precipitation and imprudence of this impeachment, when they were astonished by another measure still more rash and unwarrantable. A serjeant at arms, in the king's name, demanded of the house the five members, and was sent back without any positive answer. This was followed by conduct still more extraordinary. Next day the king himself entered the House of Commons alone, and advanced through the hall, while all the members stood up to receive him. The Speaker withdrew from the chair, and the king took possession of it. Having seated himself, and looked round for some time, he told the house that he was sorry for the occasion that forced him thither, but that he was come in person to seize the members whom he had accused of high treason, seeing they would not deliver them up to his serjeant at arms. Then addressing himself to the Speaker, he desired to know whether any of the members were in the house. But the Speaker, falling on his knees, replied that he had neither eyes to see nor tongue to speak, in that place, but as the house was pleased to direct him; and he asked pardon for not being able to give any other answer. The king sat for some time to see if

the accused were present; but they had escaped a few minutes before his entry, and taken shelter in the city. Disappointed, perplexed, and not knowing on whom to rely, he next proceeded, amidst the invectives of the populace, who continued to cry out, "Privilege, privilege!" to the common council of the city at Guildhall, where he justified his proceedings respecting the fugitives, and expressed a hope that they would not find shelter or protection in the city. The common council answered his complaints by a disdainful silence; and, on his return, one of the populace, more courageous or insolent than the rest, cried out, "To your tents, O Israel!"

When the Commons assembled the next day, they affected or felt the greatest terror, and passed a unanimous vote that the king had violated their privileges, and that they could not assemble again in the same place, till they had obtained satisfaction, and a guard for their security. Meanwhile the king retired to Windsor, whence he wrote to his parliament, promising every satisfaction in his power. But they were resolved to accept of nothing unless he would discover his advisers in that illegal measure; a condition which they knew that, without rendering himself for ever vile and contemptible, he could not possibly submit to.

The Commons had already stripped the king of most of his privileges; the bishops were fled, the judges were intimidated; and it now only remained, after securing the church and the law, that they should also get possession of the sword. The power of appointing governors and generals, and of levying armies, still continued a prerogative of the crown. Having first magnified their terrors of popery, which perhaps they actually dreaded, the Commons proceeded to petition that the Tower might be put into their hands, and that Hull, Portsmouth, and the fleet, should be intrusted to persons of their choosing. Compliance with these requests was calculated to subvert what remained of the monarchy; but such was the necessity of the times, that they were first contested, and then granted. The Commons then desired to have a militia, raised and governed by such officers and commanders as they should nominate. But Charles hesitated. Being at that time in Dover attending the queen and the Princess of Orange, who was about to leave the kingdom, he replied that he had not now leisure to consider a matter of such great importance; and therefore would defer an answer till his return. The Commons, however, were well aware that they had gone too far to recede; and hence they were desirous of leaving him no authority whatever, conscious that they themselves would be the first victims of his free exercise. They alleged that the dangers and distempers of the nation were such as could endure no longer delay; and unless the king speedily complied with their demands, they would be obliged, both for his safety and that of the kingdom, to embody and direct a militia by the authority of both houses. In their remonstrance they also desired to be permitted to command the army for an appointed time; a request which so exasperated him, that he exclaimed with indignation, "No, not for an hour!" This peremptory refusal broke off all further treaty, and both sides now resolved to have recourse to arms.

CHAP. IV.

REIGN OF CHARLES I.: CIVIL WAR.

Charles, with his family, retires to York.—Fruitless negotiations.—State of the belligerent parties.—Inactivity of the parliamentary army.—Skirmish at Worcester.—Battle of Edgehill.—Association in favour of the King.—Fairfax defeated in the north.—Battle of Stratton.—Bristol taken by the royalists.

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—Siege of Gloucester.—Raised.—Battle of Newbury.—Advantages gained by Fairfax and Cromwell.—Lord Fairfax defeated at Atherton.—The Scots agree to assist the Parliament.—Solenn League and Covenant.—Dexterity of Vane.—King's Irish auxiliaries.—Dispersed at Lantwich.—Siege of York.—Royalists totally defeated at Marston-Moor.—Demands of the Parliament.—Execution of Laud.—Exploits of Montrose in Scotland.—Defeat of the Covenanters under Burley at Aberdeen.—Subsequent movements.—Devastation of Argyll's country.—Battle of Inverlochy.—Sack of Dundee.—Battles of Alderney and Alford.—Parliamentary army new-modelled by Cromwell.—Royalists defeated at Naseby.—Bristol taken.—Retreat of the King to Oxford.—Battle of Kilsyth.—Montrose defeated at Philiphaugh.—Charles throws himself on the Scottish army at Newark.—Negociations and proceedings in consequence.—Surrender of the King's person to the English.—The army usurp the sovereignty.—Seizure of the King by Cromwell.—Designs of the army resisted, but ineffectually.—Presbyterian members forced to leave the House.—Both parties treat with the King.—His resolution to quit the kingdom.—Seized and confined in the Isle of Wight.—Levellers.—Danger of Cromwell from this sect.—Put down.—The Scottish army under Hamilton defeated.—State of parties.—Cromwell enters Edinburgh in triumph, and settles the government of Scotland.—Negociations between the King and Parliament.—Pride's Purge.—Charges against the King.—His trial.—His sentence.—His execution.—Behaviour in his last moments.—Feelings of the nation on the King's death.

Charles, taking the Prince of Wales and the Duke of York along with him, retired, by slow journeys, to the city of York, where the people were more loyal, and less infected with the prevailing spirit of the times, than elsewhere. Here he found his cause backed by a more numerous party among the people than he had expected. The nobility and gentry from all quarters, either personally or by messages and letters, expressed their duty towards him; and the queen, who was then in Holland, had succeeded in levying men and procuring ammunition by selling the crown jewels. But before war was openly declared, the semblance of a negociation was kept up, rather with a view to please the people, than with any hope of reconciliation. Nay, that the king might despair of all composition, the parliament sent him the conditions on which they were willing to come to an agreement. Their demands were contained in nineteen propositions or articles, and in effect amounted to a total abolition of monarchical authority. It was required that no man should remain in the council who was not agreeable to parliament; that no deed of the king's should be held valid unless it passed the council, and was attested under their hand; that all the officers of state should be chosen with consent of parliament; that none of the royal family should marry without the consent of parliament or of council; that the laws should be executed against Catholics; that the votes of Catholic lords should be excluded; that the reformation of the liturgy and church government should proceed according to the advice of parliament; that the ordinance with regard to the militia should be acquiesced in; that parliament should judge all delinquents; that a general pardon should be granted, with such exceptions as might be advised by parliament; that the forts and castles should be disposed of by consent of parliament; and that no peers should be created but with consent of both houses. War on any terms was esteemed by the king and all his counsellors preferable to a peace on such ignominious terms. "If I should submit to these terms," said he, "I may have my hand kissed, and may retain the title of majesty, but I should remain but the outside, the picture, the sign of a king." Charles accordingly resolved to support his authority by force of arms. His towns, he said, were taken from him; his ships, his army, and his money. But there still remained to him a good cause, and the hearts of his loyal subjects, which, with God's

blessing, he doubted not would recover all the rest. Therefore, collecting some forces, he advanced southwards, and erected his royal standard at Nottingham.

The struggle now about to commence seemed, in many respects, exceedingly unequal. The king, indeed, was supported by a splendid nobility, and a large portion of the more considerable gentry, who, dreading a total confusion of ranks, enlisted themselves under the banner of their monarch, from whom they received, and to whom they communicated, lustre. The cordial concurrence of the bishops and church of England also increased the number of his adherents. But it may safely be affirmed, that the high monarchical doctrines so much inculcated by the clergy had been eminently prejudicial to his cause; while the bulk of the nobility and gentry who now attended the king in his distress breathed the spirit of liberty as well as of loyalty; and it was only in the hopes of his submitting to a limited and legal government that they were willing to sacrifice their lives and fortunes in his cause. On the other hand, the city of London, and most of the great corporations, took part with the parliament. In the capital, no less than four thousand men enlisted in one day; and the demand for a loan, by the parliament, was answered with so much alacrity, that the treasure flowed in faster than it could be received. All the sea-ports, except Newcastle, were also in the hands of the parliament; and the seamen naturally followed the party espoused by the ports to which they belonged. Add to this, that the example of the Dutch commonwealth, where liberty had so happily supported industry, made the commercial part of the nation desire to see a similar form of government established in England; whilst many families, who had enriched themselves by commerce, finding that, notwithstanding their opulence, they could not raise themselves to a level with the ancient gentry, adhered to a power by the success of which they hoped to acquire both rank and consideration.

At first every advantage seemed to lie against the royal cause. The king was totally destitute of money, while, from the causes already mentioned, the parliament were secure of a considerable revenue. They had begun by seizing all the magazines of arms and ammunition, and their fleet intercepted the greater part of the succours sent by the queen from Holland; so that the king, in order to arm his followers, was obliged to borrow the weapons of the trained bands, under promise of restoring them on the return of peace. The nature and qualities of his adherents alone gave the king some compensation for all the advantages possessed by his adversaries. More bravery and activity were hoped for from the generous spirit of the nobles and gentry, than from the baser disposition of the multitude; and as the landed gentlemen had levied and armed their tenants at their own expense, greater force and courage were to be expected from these rustic troops than from the vicious and enervated population of cities.

But the parliamentary forces were ill officered or ill directed, otherwise, with a disposable force of six thousand men, which lay within a few days' march of the royalists, they might have easily dissipated the small number of troops which the king had been able to collect, amounting to no more than eight hundred horse and three hundred foot. In a short time the parliamentary army marched to Northampton, where the Earl of Essex, who had joined them, found a force amounting to fifteen thousand men. The king's army too was soon reinforced from all quarters; but having no force capable of coping with the parliamentary army, he thought it prudent to retire to Derby, and thence to Shrewsbury, in order to cover the levies which his friends were making in those parts. At Wellington, a day's march from Shrewsbury, he assem-

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bled his forces, amounting to near ten thousand men, and caused to be read at the head of every regiment his military orders, in which he protested solemnly before his whole army that he would maintain the Protestant religion according to the church of England; that he would govern according to the known statutes and customs of the kingdom; and that he would observe inviolate the laws to which he had given his consent during the present and preceding parliaments.

While Charles lay at Shrewsbury, he received the news of an action, the first that occurred in this unhappy contest, in which his party were victorious. On the appearance of civil commotion in England, the Princes Rupert and Maurice, sons of the elector palatine, had offered their services to the king; and the former at that time commanded a body of horse which had been sent to Worcester to watch the motions of Essex, who was then marching towards that city. The prince, however, had scarcely arrived, when he saw some of the enemy's cavalry approaching the gates. Without a moment's delay he attacked them as they were defiling from a lane and in the act of forming, killed their commander, Colonel Sandys, routed the whole party, and pursued them above a mile.

At this period military science and skill were at the lowest possible ebb in England; so much so, indeed, that, however much the contending parties might differ in spirit or in means, they were on a footing of perfect equality in ignorance of the principles and conduct of war. The hostile armies moved simultaneously, the king's from Shrewsbury, and the parliamentary from Worcester; but so totally destitute were both of intelligence, that they wandered about for ten days in absolute ignorance of each other's motions. At length, on the 23d of October 1642, they met at Keinton, or Edgehill, in the county of Warwick. The royalists were commanded in chief by the Earl of Lindesay, who had seen some service in the Low Countries, and now had under him Prince Rupert, master of the horse, Sir Jacob Astley in charge of the foot, Sir Arthur Aston commanding the dragoons, and Sir John Heydon the artillery. The general-in-chief of the parliamentary forces was the Earl of Essex, assisted by a number of subordinate officers as yet unknown to fame. In the encounter which immediately ensued, the royalists were at first victorious. Both wings of the parliamentary army were broken and put to flight by the onset of Prince Rupert's cavalry, supported by the troops under Aston and Wilmot; and if the royalist reserve had remained steady, the day would have been won. But thinking the victory already decided, they broke up from their position to join in the pursuit, and, whilst in the confusion produced by this disorderly movement, they were attacked by Sir William Balfour, who had anxiously watched their motions, with the parliamentary reserve, and defeated in their turn. Both armies then rallied, and faced each other for some time, neither party venturing to renew the attack: they lay all night under arms, and next day withdrew, Essex towards Warwick, and the king to his former quarters. Five thousand men, it is said, were left dead on the field in this bootless encounter. Soon afterwards, the king took Banbury and Reading, and defeated two regiments of his enemies at Brentford, taking five hundred prisoners. Thus ended the campaign of 1642, in which, though the king upon the whole had the advantage, yet the parliamentary army amounted to twenty-four thousand men, and was much superior to his. Nevertheless, his enemies had so far been humbled as to offer terms of peace. This led to the negotiations at Oxford. The terms required by the parliament as the condition of the king's recall, were the disposal of the militia, the abolition of Episcopacy, and the settlement of ecclesiastical controversies by

an assembly of divines. But considerable abatement would probably have been made in these demands if Charles had not been extravagant in his; and the failure of the negotiation is ascribed to the king's fidelity to an unhappy promise he had made to the queen to accede to no terms without her intervention and consent.

While the treaty was in dependence no cessation of hostilities took place. On the 27th of April 1643 Reading surrendered to the parliamentary forces under the Earl of Essex, who commanded a body of eighteen thousand men. In the north, the Earl of Northumberland united the counties of Northumberland, Cumberland, and Westmoreland, in a league for the king, and some time after engaged other counties in the same association. The same nobleman also took possession of York, and the Earl of Newcastle dislodged the forces of the parliament under Fairfax at Tadcaster; but his victory was not decisive. Other advantages were also gained by the royalists, the most important of which was at Stratton, where Waller, who commanded the parliamentary army, was entirely defeated, and forced to fly with only a few horse to Bristol. This happened on the 13th of July, and was followed by the siege of Bristol, which surrendered to Prince Rupert on the 25th of the same month.

Although the taking of Bristol cost the royalists dear, five hundred having fallen in the attempt to carry it by storm, yet their general success had greatly dispirited the opposite party; and the confusion which now prevailed at London was so great that some proposed to the king to march directly to the metropolis, which it was hoped might be reduced by an insurrection of the citizens, by victory, or by treaty, and thus put an end at once to the civil disorders. But this judicious advice was rejected; and it was resolved first of all to reduce Gloucester, that the king might have the whole course of the Severn under his command. By this means it was hoped that the rich but disaffected counties of the west, losing the protection of their friends, might be forced to pay large contributions as an atonement for their disaffection; that a communication might be maintained between Wales and these new conquests; and that half the kingdom, freed from the enemy, and united into one firm body, might be employed in re-establishing the king's authority throughout the remainder. The siege accordingly commenced on the 10th of August; but the town being defended by Massey, a resolute governor, and well garrisoned, made a vigorous defence. The consternation in London, however, was as great as if the enemy had already been at their gates; and in the midst of the general confusion a design was formed by Waller of forcing the parliament to accept of some reasonable conditions of peace. He imparted his design to some others; but a discovery being made of their proceedings, he and two others were condemned to death. Waller, however, escaped with a fine of £10,000. In the meanwhile Gloucester was reduced to the utmost extremity. A general assault had been repelled by the desperate enthusiasm of the garrison and city; but the means of prolonging the defence were now nearly exhausted. As a last resource, the parliament dispatched Essex with an army of fourteen thousand men to raise the siege. This he effected without much difficulty; and on entering the place he found only one barrel of gunpowder left, and the provisions nearly exhausted.

But on his return to London he was intercepted by the king's army, and a desperate battle ensued at Newbury, which lasted till night. Essex's horse were several times broken by the king's, but his infantry preserved its formation; and the front ranks presenting a formidable array of pikes, whilst those in the rear poured in a destructive fire, Prince Rupert and the gentry composing the royal caval-

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Reign of Charles I. ry were unable, notwithstanding the furious impetuosity of their attacks, to make any impression on its compact order. Night put an end to the contest, but left the victory undecided. On the side of the king fell the brave, accomplished, and virtuous Lord Falkland, one of the few personages to be met with in history whose life and death were equally honourable and glorious. Next morning Essex proceeded on his march to London; and although he had rather escaped a defeat than gained a victory, he obtained the approbation of parliament. The king followed in the same direction, and, having taken possession of Reading, he established a garrison there, and by that means straitened London and the quarters of the enemy.

In the north, during the summer, the Earl, now created Marquis, of Newcastle, had raised a considerable force for the king; and great hopes of success were entertained from that quarter. But there appeared, in opposition to him, two men, on whom the event of the war finally depended, and who about this time began to be remarked for their valour and military conduct. These were Sir Thomas Fairfax, son to the lord of that name, and Oliver Cromwell. The former gained a considerable advantage over the royalists at Wakefield, and took General Goring prisoner; the latter obtained a victory at Gainsborough over a party commanded by General Cavendish, who perished in the action. But both these defeats were more than compensated by the total rout of Lord Fairfax at Atherton Moor, and the dispersion of his army, which happened on the 31st of July. After this victory, the Marquis of Newcastle sat down before Hull with an army of fifteen thousand men; but, being beaten off by a sally of the garrison, he suffered so much that he thought it proper to raise the siege. About the same time Manchester advanced from the eastern associated counties, and having joined Cromwell and young Fairfax, defeated the royalists at Horne Castle, where the conduct and gallantry of these two rising officers were eminently conspicuous. But though fortune had thus balanced her favours, the king's party still remained much superior in the north; and had it not been for the garrison of Hull, which kept Yorkshire in awe, a junction of the northern forces with the army of the south might have enabled the king, instead of undertaking the imprudent enterprise against Gloucester, to march directly to London and put an end to the war. The indecisive battle of Newbury terminated the campaign of 1643, by both parties retiring into winter quarters.

The issue of the war being still doubtful, both the king and parliament began to look for assistance from other nations. The former looked to Ireland, the latter to Scotland. The parliament of England, at the commencement of the civil dissensions, had invited the Scots to interpose their mediation, which, however, the king had declined. Early in the spring of 1643 this offer was renewed, but with no better success than before. Commissioners were also empowered to urge on the king to a compliance with the presbyterian worship and discipline; but this he absolutely refused, as well as to call a parliament in Scotland; and the commissioners, finding themselves unable to prevail in any one of their demands, returned highly dissatisfied. Disappointed in all these views, the English parliament now sent commissioners to Edinburgh, to treat of a more close confederacy with the Scottish nation. The person in whom they principally confided on this occasion was Sir Harry Vane, who, in eloquence, address, and capacity, as well as in art and dissimulation, was not surpassed by any one in that age, so famous for men of active talents. By his persuasions was framed at Edinburgh the Solemn League and Covenant, which effaced all former protestations and vows taken in both kingdoms, and long maintained its credit and authority. In this covenant, the subscribers,

besides mutually engaging to defend each other against all opponents, bound themselves to endeavour, without respect of persons, the extirpation of popery, prelacy, superstition, heresy, and profaneness; to maintain the rights and privileges of parliaments, together with the king's authority; and to discover and bring to justice all incendiaries and malignants. They vowed also to preserve the reformed religion as established in the church of Scotland; but, by the artifice of Vane, no declaration more explicit was made with regard to England and Ireland, than that those kingdoms should be reformed according to the word of God and the example of the purest churches. This equivocal abjuration of prelacy completely blinded the Scottish Presbyterians, who, assuming their own to be the purest church, never doubted that it was intended to serve as a model for England. But, as a leader of the sect of Independents, Vane had other views, and artfully reserved a loophole of retreat whenever it should be convenient to dispense with the assistance of the Scots. Meanwhile the Solemn League and Covenant was received in the Scottish convention, and in the assembly of the kirk, with tears of enthusiastic joy, and transmitted to the English parliament and assembly of divines at Westminster, where, for different reasons, it was received with equal applause, and ordained to be universally subscribed in both kingdoms. By a treaty with the convention, twenty-one thousand Scottish troops were to be retained in arms at the expense of England, to be led by their own generals, and to receive orders from a committee of both kingdoms.

The king likewise, in order to secure himself, had concluded a cessation of arms with the Irish rebels, and recalled a considerable part of his army from Ireland. Some Irish Catholics came over with these troops, and joined the royal army, where they continued the same cruelties and disorders to which they had been accustomed; and the parliament voted that no quarter should ever be given them in any action. But Prince Rupert having made some reprisals, this inhumanity was repressed on both sides.

The campaign of 1644 proved very unfortunate to the royal cause. The forces brought from Ireland were landed at Mostyn in North Wales, and placed under the command of Lord Byron. They then besieged and took the castles of Hawarden, Beeston, Acton, and Deddington-house. No place in Cheshire or the neighbourhood now adhered to the parliament except Lantwich, and to it Byron laid siege in the depth of winter. Alarmed at this progress, Sir Thomas Fairfax assembled an army of four thousand men in Yorkshire, and having joined Sir William Brereton, approached the camp of the royalists. Byron and his soldiers, elated with success, entertained a most profound contempt for their enemies, and, as usual in such cases, paid dear for their absurd vanity. Fairfax suddenly attacked their camp, while the swelling of the river by a thaw divided one part of the army from the other. Those immediately opposed to Fairfax were quickly driven from their post, and having retired into the church of Acton, were surrounded and taken prisoners; the other part retreated precipitately without fighting; and thus was dissipated or rendered useless the body of auxiliaries from Ireland. This happened on the 25th of January. On the 11th of April ensuing Colonel Bellasis was totally defeated at Selby in Yorkshire by Sir Thomas Fairfax, who had returned from Cheshire with his victorious forces. Being afterwards joined by Lord Leven with the Scottish army, Fairfax, in conjunction with his ally, sat down before the city of York, but being unable to invest the city completely, they were obliged to content themselves with incommoding it by a loose blockade. Hopetoun, having assembled a body of fourteen thousand men, endeavoured to break into Sussex, Kent, and the southern association, which seem-

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The great advantages which the parliament had gained in the north seemed now to second their enterprises, and finally to promise them success. Manchester having taken Lincoln, had united his army to that of Leven and Fairfax; and York was now closely besieged by their numerous forces. That town, though vigorously defended by the Marquis of Newcastle, was reduced to the last extremity, when Prince Rupert, having joined Sir Charles Lucas, who commanded Newcastle's horse, hastened to its relief with an army of twenty thousand men.

The Scottish and parliamentary generals raised the siege, and, drawing up on Marston-moor, prepared to give battle to the royalists. By a dexterous movement, or rather by masking his movements, Rupert, interposing the Ouse between him and the enemy, threw military stores and provisions into York, and joined his forces with those under Newcastle. The marquis then endeavoured to persuade him, that, having successfully effected his purpose, he ought to be contented with the present advantage; remain on the defensive at least till an expected reinforcement arrived; and leave the enemy, diminished by losses, and discouraged by ill success, to dissolve by the mutual dissensions which had begun to take place among them. The prince, however, hurried on by his natural impetuosity, gave immediate orders for fighting. His forces occupied Marston-moor; those of his opponents were posted in the adjacent fields; and both sides were nearly equal in numbers. Fifty thousand British subjects were now drawn up in order of battle, and ready to begin the work of mutual destruction. After an ineffectual cannonade across a bank and ditch which separated the two armies, the signal for close combat was given nearly at the same instant by both sides. A moment of silent suspense followed, each party expecting that the other would begin the attack. But evening approached, and no time was to be lost. At the head of the left wing of the parliamentary army Cromwell and David Leslie crowned the bank, drove back Rupert's right wing, dispersed his cavalry, and overpowered part of his centre. A different fortune awaited the right wing of the parliamentary army, where young Fairfax commanded. Charged with irresistible impetuosity by General Hurry, it was beaten back in disorder; and a reserve of the Scottish infantry, which moved to its support, was also cut up with astonishing celerity. The royalists then pushed for the enemy's baggage, and began to plunder. But while they were thus occupied, Cromwell and Leslie wheeled round and restored the battle. The parliamentary right wing now rallied on the left, and the whole army having changed its front, drew up in a position at right angles to that which it had occupied at the commencement of the battle. The royalists did the same, and the combat was renewed with great fury on both sides. But fortune soon declared in favour of the parliamentarians. The shock, though bloody, was brief, and the victory decided by Leslie's three Scottish regiments and Cromwell's brigade of ironsides. The royal army was driven off the field, and its whole artillery taken.

Immediately after this unfortunate action the Marquis of Newcastle left the kingdom, while Prince Rupert retired into Lancashire. The city of York surrendered in a few days, and Newcastle was soon afterwards taken by storm. This was a fatal blow to the royal cause, and far from being counterbalanced by an advantage gained at Cropredy-bridge by the king over Waller, or even by the surrender

of Essex's forces, which happened on the 1st of September. On the 27th of October another battle was fought at Newbury, in which the royalists were worsted; but soon after they retrieved their honour at Dennington Castle, which finished the campaign in 1644.

In 1645 negotiations were renewed, and the commissioners, sixteen from Charles, twelve from the parliament, and four from the Scots, assembled at Uxbridge on the 30th of January; but it was soon found impossible to come to any agreement. The demands of the parliament were exorbitant, and, what was worse, their commissioners alleged that these were nothing but preliminaries. The king was required to attain, and except from a general pardon, forty of the most considerable of his English, and nineteen of his Scottish subjects, together with all the popish recusants who had borne arms for him. It was insisted that forty-eight more, with all the members of either house who had sat in the parliament called by the king at Oxford, all lawyers and divines who had embraced the king's party, should be rendered incapable of any office, be forbidden the exercise of their profession, be prohibited from coming within the verge of the court, and should forfeit the third of their estates to the parliament. It was required, that whoever had borne arms for the king should forfeit the tenth of their estates, or, if that did not suffice, the sixth, for the payment of public debts. And, as if such terms would not have sufficiently annihilated the royal authority, it was further demanded that the court of wards should be abolished; that all the considerable officers of the crown, and particularly the judges, should be appointed by parliament; and that the right of peace and war should not be exercised without consent of parliament. Considerable abatement was, however, made in these rigorous demands; and as the rising power of the Independents made it the interest of the Presbyterians to conclude peace, if it could be done with any degree of safety, the treaty was now limited to the three subjects of religion, the militia, and Ireland. On the first, the king's enemies required the abolition of prelacy, the confirmation of the acts of the assembly of divines at Westminster, and the ratification of the Solemn League and Covenant, with an injunction to all to take it, beginning with the king himself; on the second, the management of the militia till seven years after the peace, and an act of mutual oblivion; on the third, or Ireland, a cessation of arms, and the surrender to parliament of the direction of the war, and of the power of concluding peace without their consent. But, after a great deal of fruitless negotiation, Charles ultimately refused to concede any of these points, and the treaty was in consequence broken off. The news of Montrose's victories in Scotland, and the hope of ten thousand men under the Duke of Lorraine, which the queen had stipulated for, are alleged to have been the chief causes of the failure of the treaty. A little before the commencement of this negotiation, the parliament, to show their determined resolution to proceed as they had begun, brought to the block Archbishop Laud, who had for a considerable time been a prisoner in the Tower, and was no longer capable of giving offence, or rendering himself dangerous to any one. The sacrifice of this weak, wicked, and unfortunate man; was therefore, politically considered, an act of bootless severity, and as such ought to be condemned.

But while the king's affairs were daily becoming worse in England, they seemed to revive a little in Scotland, through the conduct and valour of the Earl of Montrose. On his return from his travels, Montrose had been introduced to the king; but not meeting with an agreeable reception, he went over to the Covenanters, and had been active in forwarding all their schemes. Being commis-

Reign of Charles I. sioned, however, by the tables to wait upon the king while the army lay at Berwick, he was gained over by the civilities and caresses of that monarch, and thenceforth devoted himself entirely, though secretly, to his service. Having attempted to form an association in favour of the royal cause, Montrose was thrown into prison; and on his release, which he managed to obtain, he found the king ready to give ear to his counsels, which were of the boldest and most daring kind. The whole nation of Scotland was occupied by the Covenanters; considerable armies were kept on foot by them, and every place was guarded by a vigilant administration; yet, by his own credit, and that of a few friends who remained to the king, this bold renegade undertook to raise such commotions as should soon oblige the malcontents to recal the forces which had so sensibly turned the balance in favour of the English parliament. The defeat at Marston-moor had left him no hopes of any succours from England; he was therefore obliged to stipulate with the Earl of Antrim for a supply of men from Ireland. And having used various disguises, as well as passed through many dangers, he arrived in Scotland, where he lay for some time concealed on the borders of the Highlands.

Although the Irish did not exceed eleven hundred foot, very ill armed, Montrose immediately put himself at their head; and, being joined by thirteen hundred Highlanders, he attacked Lord Eleho, who lay at Tibbermore, near Perth, with six thousand men, and utterly defeated him, killing two thousand of the Covenanters. He next marched northwards in order to rouse the Marquis of Huntly and the Gordons, who had before taken arms, but had been overpowered by the Covenanters. At Aberdeen he attacked and entirely defeated Lord Burley, who commanded two thousand five hundred men. But by this victory Montrose did not obtain the end he proposed; for the Marquis of Huntly showed no inclination to join an army where he was sure to be eclipsed by a powerful and daring genius acting from its own impulses.

Montrose was now in a very dangerous situation. Argyll, reinforced by the Earl of Lothian, was behind him with a great army; while the militia of the northern counties of Moray, Ross, and Caithness, to the number of five thousand, opposed him in front, and guarded the banks of the Spey, a deep and rapid river. In order to save his troops, he turned aside into the hills; but, after some marches and counter-marches, Argyll came up with him at Faivy Castle. Here, after some skirmishes, in which he was victorious, Montrose got clear of a superior army, and, by a quick march through almost inaccessible mountains, placed himself absolutely beyond their reach.

But it was the misfortune of this general, that good or ill fortune proved equally destructive to his army. After every victory his Scottish adherents went home with the spoil they had collected; and had his army been composed of these only, he must soon have been altogether abandoned. But the Irish under his command, having no place to which they could retire, adhered to him in every fortune. With these, therefore, and some reinforcements of Atholemen and Maedonalds, Montrose fell suddenly upon Argyll's country, letting loose upon it all the horrors of war in their most savage form. Having collected three thousand men, Argyll marched in quest of the enemy, who had retired with their plunder, and took up a position at Innerlochy, supposing himself to be still at a considerable distance from his antagonist. While this force had thus established itself in front, the Earl of Seaforth, at the head of the garrison of Inverness and a body of five thousand new levied troops, pressed the royalists on the other side, and threatened them with total destruction. The situation of Montrose was critical in the extreme; but a stroke of genius

and fortune relieved him, and brought back victory to his standard. By a rapid and unexpected march he hastened to Innerlochy, and presented himself in order of battle before the Covenanters at the head of about eighteen hundred men. Argyll, seized with a panic, deserted his army, and, at a secure distance, having pushed off from the shore of the loch in a boat, witnessed the conflict which he had not the courage to share. The Campbells, however, made a stout resistance, but were at last defeated and pursued with great slaughter. After this victory, Montrose was joined by great numbers of Highlanders; Seaforth's army dispersed of itself; and the Lord Gordon, eldest son of the Marquis of Huntly, having escaped from his uncle Argyll, who had hitherto detained him, now joined Montrose with a considerable number of his followers, accompanied by the Earl of Aboyne.

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While Montrose was thus signaling his valour in the north, Fairfax, or rather Oliver Cromwell under his name and sanction, employed himself in new-modelling the parliamentary army, and throwing the whole into a different and much more effective form. And never perhaps was there a more singular army established than that which was now re-organized by the parliament. To the greater number of the regiments chaplains were not appointed: the officers assumed the spiritual duty, which they united with their military functions. During the intervals of action they occupied themselves in sermons, prayers, and

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exhortations. Rapturous ecstasies supplied the place of study and reflection; and whilst the zealous devotees poured out their thoughts in unpremeditated harangues, they mistook the natural eloquence which flowed from an excited and enthusiastic temperament, for illuminations and illapses of the Holy Spirit. Wherever they were quartered, they excluded the minister from his pulpit, and, usurping his place, conveyed their sentiments to the audience with all the authority that belonged to their power, their valour, and their military exploits, united with zeal and fervour. The private soldiers were infected with the same spirit; and such an enthusiasm seized the whole army as perhaps has scarce ever been equalled in the history of the world. The royalists ridiculed the fanaticism of the parliamentary armies, without being sensible how much reason they had to dread its effects. They were at this time equal, if not superior, in numbers to their enemies, but so licentious in their conduct, that they had become more formidable to their friends than to their enemies. The commanders were most of them men of dissolute characters; in the west especially, where Goring commanded, universal spoil and havoc were committed; the whole country was laid waste by the excesses of the royalist army; and even the most devoted friends of church and state longed for success to the parliamentary forces in these parts, as the only mode in which a stop could be put to these frightful disorders.

The natural consequence of this enthusiasm in the parliamentary army, and this licentiousness in that of the king, was, that equal numbers of the latter were no longer able to maintain their ground against the former. This appeared conspicuously in the decisive battle of Naseby, which was fought between forces nearly equal. Prince Rupert, by his furious onset, broke the wing of the enemy opposed to him, hut, as usual, pursued too far. Cromwell also bore down the wing of the royalists opposite that which he commanded; but instead of imitating the example of the impetuous prince, he sent a detachment in pursuit, and executing what is technically called a *quart de conversion*, attacked the exposed flank of the centre, where the royalist infantry were pressing hard on Fairfax. The result of this movement was decisive. When Rupert returned from pursuit the battle was irretrievably lost. The king called out to make but one charge more and the day would be their own; but his artillery and baggage being already taken, his infantry destroyed, and the prince's cavalry wholly exhausted by their exertions, it was now too late to attempt any such effort. After an obstinate struggle, Charles was entirely defeated, with the loss of five hundred officers and four thousand private men prisoners, and all his artillery and ammunition, while his infantry were totally dispersed.

After this fatal battle, the king retired first to Hereford, then to Abergavenny, and remained some time in Wales, in the vain hope of raising a body of infantry in these quarters, already harassed and exhausted. His affairs now went to ruin in all quarters. Fairfax retook Leicester on the 17th of June; and on the 10th of July he raised the siege of Taunton, while the royalists retired to Lampport, an open town in the county of Somerset. Here they were attacked by Fairfax, and driven from their position, with the loss of three hundred killed and fourteen hundred taken prisoners. This was followed by the loss of Bridgewater, which Fairfax took three days after, making the garrison, to the amount of two thousand six hundred men, prisoners of war. He then reduced Bath and Sharburn; and on the 11th of September Bristol was surrendered by Rupert, though a few days before he had boasted, in a letter to Charles, that he would defend the place for four months. This so enraged the king, that he immediately

recalled all the prince's commissions, and sent him a pass to go beyond sea.

In the mean time the Scots, having made themselves masters of Carlisle after an obstinate siege, marched southwards and invested Hereford, but were obliged to raise the siege on the king's approach. This was the last glimpse of success that attended his arms. Having marched to the relief of Chester, which was anew besieged by the parliamentary forces under Colonel Jones, his rear was attacked by Poyntz, and an engagement immediately ensued. The fight was maintained with great obstinacy, and victory seemed to incline to the royalists, when Jones fell upon them from the other side, and defeated them with the loss of six hundred killed and a thousand taken prisoners. The king, with the remains of his army, fled to Newark, and thence escaped to Oxford, where he shut himself up during the winter season. After the surrender of Bristol, Fairfax and Cromwell, having divided their forces, marched, the former westwards in order to complete the conquest of Devonshire and Cornwall, and the latter to attack the king's garrisons to the eastward of Bristol. Nothing was able to stand before these victorious generals; every town was obliged to submit, and every body of troops which ventured to resist them were utterly defeated.

At last news arrived that Montrose himself, after some more successes, had been defeated; and thus the only hope of the royal party was destroyed. When he had descended into the southern counties, the Covenanters, assembling their whole force, met him with a numerous army, and gave him battle at Kilsyth. But here he obtained a memorable victory. Of the Covenanters above four thousand were killed on the spot, and no remains of an army left them in Scotland. Many noblemen, who had secretly favoured the royal cause, now declared openly for it, when they saw a force able to support them. The Marquis of Douglas, the Earls of Annandale and Hartfield, the Lords Fleming, Seton, Maderty, Carnegy, and many others, flocked to the royal standard. Edinburgh opened its gates and gave liberty to all the prisoners detained there by the Covenanters, and amongst the rest to Lord Ogilvy, son to the Earl of Airly, whose family had contributed essentially to the victory gained at Kilsyth. David Leslie was now detached from the army in England, and marched to the relief of his distressed party in Scotland. Allured by vain hopes of rousing to arms the Earls of Hume, Traquair, and Roxburgh, who had promised to join him, and of obtaining from England some supply of cavalry, in which he was still very deficient, Montrose advanced still further to the south. But by the negligence of his piquet, or more probably from security engendered by success, Leslie surprised his army at Philiphaugh in the Forest, then much diminished in numbers from the desertion of the Highlanders, who, according to custom, had retired to the hills to secure their plunder. After a sharp conflict, in which Montrose displayed great valour, his forces were routed by Leslie's cavalry, and he was himself forced to fly to the mountains.

In the situation to which the king was now reduced, he resolved to grant the parliament their own terms, and sent them repeated messages to this effect; but a considerable time elapsed before they deigned to make him any reply. At last, after reproaching him with the blood spilt during the war, they informed him that they were preparing some bills, to which, if he would consent, they should then be able to judge of his pacific inclinations. In the mean time Fairfax was advancing with a victorious army in order to lay siege to Oxford; and Charles, rather than submit to be taken captive and led in triumph by his insolent subjects, resolved to give himself up to the Scots, who had never testified such implacable animosity against him,

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Rem of and to trust to their loyalty for the rest. After passing
Charles I. in disguise through many bye-ways and cross-roads, he arrived, in company with only two persons, Dr Hudson and Mr Ashburnham, at the Scottish camp before Newark, and immediately discovered himself to their general Lord Leven.

This resolution, though adopted in the midst of disaster, seems to have been formed by the king in hopes of dividing his enemies, and profiting by their dissensions, of which, indeed, any prince in his situation would not have hesitated to avail himself. Nor were there wanting circumstances to justify a measure which, because it proved unfortunate, has generally been considered as rash and ill-advised. The Presbyterian form of church government had indeed been adopted in England, under the sanction of the divines assembled at Westminster; but the parliament steadily refused to render the church supreme, and to disjoin it from all connection with the state. The Independents, also, had combined with the Erastians in parliament to procure a charitable indulgence of conscience, or, in other words, unlimited though tacit toleration of all sects and opinions; a proceeding which the English as well as Scottish Presbyterians resisted as at once incompatible with the covenant, and favourable to boundless latitudinarianism. Nor were there wanting other causes of deep offence to exasperate the Scots. Their pay was in arrear; their supplies were neglected; their cautionary garrisons in the north were demanded back; their free quarters were refused. Ever since the battle of Naseby the Presbyterian, and with it the Scottish, influence had declined, whilst that of the Independents became every day stronger and stronger. Symptoms of an approaching schism, if not collision, were apparent. Is it to be wondered that, in these circumstances, Charles, who had already maintained a secret correspondence with the two factions of his enemies, should have now calculated on widening, by his presence with one of them, the breach that had so evidently taken place? His previous views, as expressed in a confidential letter to Lord Digby, were "to draw either the Presbyterians or the Independents to side with him," and to render whichever of the two he succeeded in gaining instrumental in extirpating the other; "so that," as he says, "I shall really be king again." Nor is there any reason to doubt that, in betaking himself to the Scottish camp, the real design of the king was to endeavour to effect the object here so distinctly declared.

On the authority of an intercepted letter of the king, it has been asserted that he threw himself on the Scottish army in consequence of an assurance that they would assist him in recovering his lost prerogative, unite with the forces under Montrose, and compel the English parliament to accept a peace. In a declaration still extant, however, the Scottish leaders disclaim, in the strongest terms, any public or private agreement whatsoever with the king; and as this disclamation, which was publicly made, received no contradiction at the time, the reasonable conclusion is, that it could not be disputed. It is no doubt true that an agreement had been concerted, through Montreville the French ambassador, by which the Scots, with the knowledge and approbation of the English Presbyterians, were to escort the king to their camp. But the treaty was broken off by the refusal of the Scots to co-operate with Montrose, and by the king's hesitation to sanction and confirm the Presbyterian form of church establishment. The Scots seem, therefore, to have been perfectly sincere in their declaration to the English parliament. Charles came amongst them of his own proper motion, and not in consequence of any stipulation on their part to unite with him against their English allies; and whatever discontents

might have arisen in England, such a stipulation to support the king, without first exacting from him an unequivocal pledge to grant all the objects for which they had taken up arms, would have been the height of folly, and a sacrifice of great national interests to a romantic sentiment. Accordingly, they remained faithful to their original engagements; and although they withdrew to Newcastle to prevent the English intercepting their return home, they obtained the king's order for the surrender of Newark, guarded his person with respectful vigilance, and openly professed their resolution to avail themselves of the advantage they had thus acquired, in order to obtain the desired conformity in religion, and the establishment of peace on a durable basis.

Next came the negotiations between the Scots and English for the payment of arrears due to the former, and for the surrender of the king's person into the hands of the latter. The arrears, after many deductions, were finally settled at L.400,000; and this adjustment has been perpetually identified by historians with the agreement to deliver up the king's person, and represented as the equivalent given, or the price paid, for an act of unparalleled baseness. The confusion of facts, however, is as gross as the stigma attached to the Scottish nation is undeserved. The amount of the arrears was fixed in August. In November the question as to the disposal of the royal person remained still unsettled. At this time the Scottish parliament, indignant at a vote passed by the English parliament in September (a month after the settlement of the arrears) claiming the sole disposal of the king's person, resolved to maintain the freedom of the king, and assert his right to the English throne; but the vote was afterwards rescinded, on the just ground that it amounted to an abandonment of the solemn league and covenant, adopted in concert with the English Presbyterians, unless their joint demands were granted by the king. They offered, however, to reinstate him on the throne, and to obtain for him a just settlement with his English subjects, provided he would consent to take the covenant; and commissioners were appointed by the estates in Scotland to signify to his majesty these conditions, upon which alone he could expect to be received in Scotland, or assisted by the Scottish nation. But the king remained inflexible. In vain did the Duke of Hamilton, one of his principal friends in Scotland, unite with the ministers in representing that this alone could save him; in vain was it urged that if he conceded the Presbyterian church to both kingdoms, the demands respecting the militia would be relaxed, that all Scotland would declare in his favour, and that, while the Presbyterians remained numerous and powerful, few in England would venture to oppose the reconstitution of the monarchy with limited power. Nothing could move him to accede to that which alone could save him. On the eve of his departure, the commissioners renewed with great earnestness their offers to conduct him to Berwick, and to procure more equitable terms, provided he would take the covenant; and so anxious were they to save him, that a bare promise to comply with their religious demands would have been deemed sufficient. But all that could be wrung from this unhappy prince was a doubtful consent to tolerate Presbytery for three years; and even in making this concession, he justified it to his own curious conscience, by declaring before two of his bishops his unalterable resolution to restore and uphold Episcopacy. In the case of a sovereign cursed with such blind and obstinate infatuation, what else could be done but leave him to his fate?

It has been mentioned as a circumstance reflecting disgrace on the Scots, that the English parliament still withheld their arrears, and that the surrender of the king's

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Charles I.

person was the only condition upon which payment could be obtained. If the case had really stood so that the refusal of the Scots to deliver up Charles would have been punished only by defrauding them of the money which was justly due to them, and by no other consequence whatever, then the charge of selling the king for prompt payment might well have been alleged against them. But it must be obvious that the loss of the arrears, upon which so much stress has always been laid, was a mere trifle in comparison with the misery and bloodshed which must have ensued from drawing the sword in defence of the king, without first securing the grand objects of the covenant. Conduct such as this, on the part of the Scottish leaders, would have amounted to a violation of their solemn oaths, and a betrayal of the great national interests intrusted to their guardianship. They offered all that men, circumstanced as they were, could offer; they were willing, at any hazard, to adhere to the king, if the king would have been true to the country; and his refusal to accede to the terms proposed to him shows, that, if the Covenanters had conquered all England in his cause, they would only have rivetted more firmly the chains of Episcopacy and tyranny on themselves.¹

After the flight of Charles, Oxford surrendered to Fairfax, and the civil war terminated exactly four years after the king's standard was first erected at Nottingham. In consequence of the transactions at Newark, and the total failure of all attempts at an accommodation with the Presbyterians, the king was delivered over to the English commissioners, and conducted under a guard to Holdenby, in Northamptonshire, where he was very rigorously confined, and debarred from visits of his friends, as well as all communication with his family.

The civil war being thus ended, the king absolved his followers from their allegiance, and the parliament had now no enemy to fear but the troops which had fought for them. But it was not long before they found themselves in the same unfortunate predicament to which they had reduced the king. The majority of the house were Presbyterians, but the majority of the army were Independents. Soon after the retreat of the Scots, the former seeing every thing reduced to obedience, proposed to disband a considerable part of the army, and send the rest over to Ireland. But this was by no means relished by the Independents, and Cromwell took care to heighten the disaffection. Instead of preparing to disband, therefore, the soldiers resolved to petition, and began by demanding an indemnity, ratified by the king, for any illegal actions they might have committed during the war. But the Commons voted that this petition tended to introduce mutiny, and threatened to proceed against the promoters

of it as enemies to the state and disturbers of the public peace. The army accordingly began to set up for themselves, and a military parliament was organized, in opposition to the parliament at Westminster. The principal officers formed a council to represent the body of Peers; the soldiers elected two men out of each company, called the *agitators* of the army, to represent the Commons; and of this assembly Cromwell took care to be a member. The new parliament soon found many grievances to be redressed, and specified some of the most considerable. The Commons were obliged to yield to every request, and the demands of the agitators rose in proportion to the concessions they extorted. The Commons accused the army of mutiny and sedition; but the army retorted the charge, and alleged that the king had been deposed only to make way for their usurpations. In the mean time Cromwell, who secretly conducted all the measures of the army, while he exclaimed against their violence, resolved to seize the king's person. Accordingly a party of five hundred horse appeared at Holmby Castle, under the command of one Joyce, originally a tailor, now a cornet; and by this man was the king conducted to the army, who were hastening to their rendezvous at Triplow Heath, near Cambridge. Next day Cromwell arrived, and being received with acclamations of joy, was immediately invested with the supreme command. The Commons now discovered the designs of the army; but it was too late. All resistance had become hopeless. Cromwell advanced with precipitation, and was in a few days at St Alban's. Even submission was now to no purpose. The army still rose in their demands, in proportion as these were gratified, and at last proclaimed their intention of modelling the whole government, as well as settling the nation.

Cromwell began with accusing eleven members of the house, leaders of the Presbyterian party, as guilty of high treason, and enemies to the army. The Commons were willing to protect them; but the army insisting on their dismissal, they voluntarily left the house. At last the citizens of London, finding the constitution totally overturned, and a military despotism about to be established on the ruins of the kingly tyranny which they formerly dreaded, began to think seriously of repressing the insolence of the troops. The common council assembled the militia of the city; the works were manned; and a manifesto was published, aggravating the hostile intentions of the army. Finding that the Commons, in compliance with the request of the army, had voted that the city militia should be disbanded, the multitude rose, besieged the door of the house, and obliged them to reverse the vote which they had so lately passed. The assembly was in consequence divided into two parties; the greater part siding

¹ The comments which Mr Hume has thought it proper to make on this unfortunate transaction are sufficiently met and answered by the statements contained in the text. The following defence of the Scots against the accusations which have been so freely preferred in consequence of the transactions at Newark, will, however, be read with interest, as proceeding from a writer who will not be suspected of any undue partiality to the Covenanters, namely, Sir George Mackenzie of Rosehaugh, Lord Advocate of Scotland in the reigns of Charles II. and James VII. "The parliament of Scotland (1661)," says he, "taking to their consideration how much and how unjustly this kingdom was injured by an aspersion cast upon it for the transactions at Newcastle in anno 1647, at which time the king was delivered to the parliament of England; which was called in some histories a selling of the king; did by an express act condemn and reprobate all that treaty, and declare that the same was no national act, but was only carried on by some rebels who had falsely assumed the name of a parliament. Nor wanted there many, even in that parliament, who protested against all that procedure, and who had the courage and honesty to cause registrate that protestation. And I must here crave leave to expostulate with our neighbours of England, for inveighing so severely against our nation for delivering their king, seeing he was only delivered up to the then parliament, who first *imprisoned* and thereafter *murdered* him: whereas how soon even our rebels discovered their design, they carried into England a splendid mighty army for his defence; and when his murder came to their ears, they proclaimed his son their king, and sent commissioners to treat with him and bring him to Scotland; and when he was arrived they did contribute their lives and fortunes for his safety. And albeit some bigot Presbyterians did use him unkindly out of too much kindness to their own principles, yet even these did very generously oppose Cromwell, and such as had murdered the king; as is clear by the attack made by Major-general Montgomery at Musselburgh, and by the remonstrators at Linlithgow. They fought also two battles for him at Dunbar and Worcester, and suffered the greatest imaginable hardships." (*Memoirs of the Affairs of Scotland, from the Restoration of King Charles II. A. D. 1660.* By Sir George Mackenzie of Rosehaugh. Printed at Edinburgh in 1821, and edited by Thomas Thomson, Esq. Depute Clerk Registrar of Scotland.)

Reign of Charles I. with the citizens, but the minority, with the two speakers at their head, being for encouraging the army. Accordingly the two speakers, with sixty-two of the members, secretly retired from the house, and threw themselves on the protection of the army, which was then at Hounslow Heath. They were received with shouts and acclamations; their integrity was extolled; and the whole force of the soldiery, to the number of twenty thousand men, now moved forward to reinstate them in their places.

In the meanwhile the part of the house which was left resolved to resist the encroachments of the army. They chose new speakers, gave orders for enlisting troops, and ordered the train-bands to man the lines; while the whole city boldly resolved to resist the invasion. But this resolution only held while the enemy was at a distance. When Cromwell appeared, all was obedience and submission; and the gates were opened to the general, who attended the two speakers and the rest of the members peaceably to their habitations. The eleven impeached members having been accused as the cause of the tumult, were expelled, and most of them retired to the Continent. The mayor, the sheriff, and three aldermen, were sent to the Tower; several citizens and officers of the militia were committed to prison; the lines about the city were levelled with the ground; and the command of the Tower was given to Fairfax.

It now only remained to dispose of the king, who continued a prisoner at Hampton Court. The Independent army, at the head of which was Cromwell, on the one hand, and the Presbyterians, in name of both houses, on the other, treated with him separately in private. He had sometimes even hopes, that in these struggles for power, he might be chosen mediator in the dispute; and he expected that the kingdom, at last sensible of the miseries of anarchy, would of its own accord relapse into tranquillity. At this time he was treated with flattering marks of distinction, and allowed to converse with his own servants; whilst his chaplains were permitted to attend him, and celebrate divine service in their own way. But the most exquisite pleasure he enjoyed was in the company of his children, with whom he had several interviews. The meeting on these occasions was so touching, that Cromwell himself, who happened once to be present, could not help being moved, and was heard to declare that he never before beheld such an affecting scene. But these instances of respect were not of long continuance. As soon as the army had gained a complete victory over the House of Commons, the king was treated not only with the greatest disrespect, but even kept in continual alarm for his personal safety. The consequence was, that Charles at last resolved to withdraw himself from the kingdom.

Accordingly, on the 11th of November 1647, the king, attended only by Sir John Berkeley, Ashburnham, and Leg, privately left Hampton Court; and his escape was not discovered till nearly an hour afterwards, when those who entered his chamber found on the table some letters directed to the parliament, to the general, and to the officer who had attended him. He travelled all night through the forest, and arrived next day at Titchfield, a seat of the Earl of Southampton, occupied by the countess dowager, a woman of honour, to whom the king knew he might safely intrust his person. Before he arrived at this place, he went to the sea-coast, and expressed great anxiety that a ship, which he seemed to look for, had not arrived. As he could not hope to remain long concealed at Titchfield, the question was, what measure should next be embraced? In the neighbourhood lay the Isle of Wight, of which Hammond was governor. This man was a dependent of Cromwell's, which was an unfavourable circumstance; yet as he was nephew to Dr Hammond, the king's

favourite chaplain, and had acquired a good reputation in the army, it was thought proper to have recourse to him in the present emergency, when no other rational expedient could be thought of. Ashburnham and Berkeley were accordingly dispatched to the island. They had orders not to inform Hammond of the place where the king lay concealed, till they had first obtained from him a promise not to deliver up his majesty, even though the parliament and army should require him, but restore him to his liberty, if he could not protect him. The promise would have been but a slender security; yet, even without exacting it, Ashburnham imprudently, if not treacherously, brought Hammond to Titchfield; and the king was obliged to put himself into his hands, and to attend him to Carisbrooke Castle in the Isle of Wight, where, though he was received with great demonstrations of respect and kindness, he was in reality a prisoner.

While the king continued in this forlorn situation, Cromwell found himself upon the point of losing all the fruits of his schemes, by having his own artifices turned against himself. Among the Independents, who in general were hostile to all ecclesiastical systems, a set of men grew up called Levellers, who disallowed all subordination whatsoever, and declared that they would have no other chaplain, king, nor general, save Jesus Christ. All this would have gone down very well with Cromwell as long as it was only directed against his enemies, but he did not relish it quite so well when applied to himself. Accordingly, having intimation that the Levellers were to meet at a certain place, he unexpectedly appeared before them at the head of his red regiment, which had hitherto been deemed invincible, and demanding, in the name of God, what these meetings and murmurings meant, he expostulated with them upon the dangerous consequence of their precipitate schemes, and desired them immediately to depart. Instead of obeying, however, they returned an insolent answer; upon which he ordered his guards to disperse them, caused several of them to be hanged upon the spot, sent others to London, and thus dissipated a faction which was no otherwise criminal than in having followed his own example. Cromwell's authority was greatly increased by the reduction of this sect; and it became irresistible in consequence of a new and unexpected addition to his successes.

Reign of Charles I. Meanwhile the relative situations of parties had materially changed, and the power of the Independents been increased as that of the Presbyterians declined. The former, too, began to disclose ulterior views and intentions which had never hitherto been suspected by their allies the Scots, whom they now took all occasions to mortify. The latter also found, that in the matter of Presbytery, no less than in the conduct of the war and the policy pursued towards the king, they had been overreached and deceived. The discovery in question brought on an accommodation between Charles and his Scottish subjects, who, in consideration of his majesty agreeing to confirm the covenant in parliament, and establish the Presbyterian church till it should be revised by the assembly of divines, engaged to assert and restore his authority by force of arms. This treaty was afterwards called *The Engagement*; but although discontents had multiplied between the two kingdoms, it was found no easy matter to induce the nation to enter into the views of those by whom the engagement had been concluded. The Scottish royalists, under Traquair and Callender, were impatient for action; the moderate Presbyterians, under the Duke of Hamilton, wished to restore the king and the power of the English Presbyterians; the wild party, headed by Argyll, and seconded by the kirk, denounced the engagement as a deadly breach of the covenant, and deprecated hostilities with

Reign of Charles I. England. Amidst this division of party and opinion, new levies were raised for the invasion of England, and the chief command given to Hamilton, as David Leslie and the other officers could not act without the sanction of the church.

Langdale headed a separate body of royalists who had not taken the covenant, and both invaded the north of England. But though these two armies amounted to above twenty thousand men, Cromwell, at the head of eight thousand hardy veterans, feared not to give battle to the divided and undisciplined mass, conducted by an incapable leader. Attacking these bodies in succession, he routed and dispersed them, took Hamilton prisoner, and, following up the blow, soon entered Scotland. Of the whole Scottish force only a small body under Callender, who disdained to surrender, made their way back to Scotland. This overthrow was the signal for the High Presbyterian party to bestir themselves. New levies were indeed raised by the Earl of Lanark, Hamilton's brother; but these proved of no avail. The Earls of Argyll, Cassillis, and Eglington, at the head of the Presbyterians of the west country and the Highlands, marched to Edinburgh, and inviting Cromwell to the metropolis, conducted him thither in triumph, suppressed the engagement, and renewed the solemn league and covenant with England. This expedition of the Covenanters to Edinburgh, commonly called the Whigamores' Inroad, gave the finishing blow to the royal cause in Scotland at this time.

During these contentions the king, who was kept a prisoner at Carisbrooke Castle, continued to negotiate with the parliament for putting an end to the unspeakable calamities of the kingdom. And the parliament, on the other hand, saw no method of restraining the military, except to counterbalance it by the kingly power. Frequent proposals for an accommodation accordingly passed between the captive king and the Commons; but the great obstacle which had all along stood in the way still remained unshaken. This was the king's refusal to abolish Episcopacy, though he consented to alter the liturgy. However, the treaty was still carried on with vigour, and the parliament for the first time seemed in earnest to conclude their negotiations. But all was now too late. The victorious army, headed by Cromwell, advanced to Windsor, and with furious remonstrances began to demand vengeance on the king. The unhappy monarch had been lately sent in custody to that place; and from thence he was now conveyed to Hurst Castle in Hampshire, opposite to the Isle of Wight. The parliament in the meanwhile began to issue ordinances for a more effectual opposition to these military encroachments, when they were astonished by a message from Cromwell, intimating his intention of paying them a visit next day with his whole army, and at the same time ordering them to raise him £40,000 on the city of London.

The Commons, though destitute of all hopes of prevailing, had still the courage to resist, and to attempt in the face of the whole army to finish the treaty they had begun with the king. They had taken into consideration the whole of his concessions; and although they had formerly voted them unsatisfactory, they now renewed the consultation with great vigour. After a violent debate, which lasted three days, it was carried in the king's favour, by a majority of 129 against 83, that his concessions were a foundation for the houses to proceed upon in settling the affairs of the nation. This was the last attempt in his favour; for the next day Colonel Pride, at the head of two regiments, blockaded the house, and seizing in the passage forty-one members of the Presbyterian party, sent them to a low room belonging to the house, that passed by the denomination of *Hell*. Above

Reign of Charles I. a hundred and sixty members were excluded; and none were allowed to enter but the most furious and determined of the Independents, in all not exceeding sixty. This atrocious invasion of parliamentary rights commonly passed by the name of Pride's Purge, and the remaining members were called the Rump. The latter soon voted that the transactions of the house a few days before were entirely illegal, and that their general's conduct was just and necessary.

Nothing now remained to complete the career of the Rump but to put the king to death. In this assembly, composed of the most obscure citizens and officers of the army, a committee was appointed to bring in a charge against the king; and on their report a vote was carried, declaring it treason in a king to levy war against his parliament. It was therefore resolved that a high court of justice should be appointed, to try his majesty for this newly-invented treason. For form's sake they desired the concurrence of the few remaining Lords in the upper house; but there was virtue enough left in that body unanimously to reject the proposal. The Commons, however, were not to be stopped by so small an obstacle. They voted that the concurrence of the House of Lords was unnecessary, and that the people were the origin of all just power. And to add to their zeal, a woman of Herefordshire, illuminated by prophetic visions, desired admittance, and communicated a revelation which she pretended to have received from heaven. She assured them that their measures were consecrated from above, and ratified by the sanction of the Holy Ghost. This intelligence gave them great comfort, and much confirmed them in their present resolutions. Colonel Harrison, the son of a butcher, was commanded to conduct the king from Hurst Castle to Windsor, and from thence to London. His subjects, who crowded to see their fallen sovereign, were greatly affected at the change which appeared in his face and person. He had permitted his beard to grow, and his hair had become venerably gray, rather by the pressure of anxiety than by the hand of time; whilst the rest of his apparel bore the marks of misfortune and decay. He had long been attended by an old decrepid servant commonly called *Sir Philip Warwick*, who could only deplore his master's fate, without being able to revenge his cause. All the exterior symbols of sovereignty were now withdrawn, and his attendants had orders to serve him without ceremony. He could not, however, be persuaded that his adversaries would bring him to a formal trial; but he every moment expected to be dispatched by private assassination.

From the 6th to the 20th of January was spent in making preparations for this extraordinary trial. The court of justice consisted of a hundred and thirty-three persons named by the Commons; but of these about seventy only met upon the trial. The members were chiefly composed of officers of the army, most of them of very mean birth, together with some of the Lower House, and a few citizens of London. Bradshaw, a lawyer, was chosen president; Coke was appointed solicitor for the people of England; Dorislaus, Steele, and Aske, were named assistants. The court sat in Westminster Hall. When the king was brought forward before this court, he was conducted by the mace-bearer to a chair placed within the bar. Though long detained a prisoner, and now produced as a criminal, he still maintained the dignity of a king. The charge was then read by the solicitor, accusing him of having been the cause of all the bloodshed which had flowed since the commencement of the war; after which Bradshaw directing his discourse to Charles, told him that the court expected his answer. The king began his defence by declining the authority of the court. He represented, that having been engaged in treaty with his two houses of

Rep. of parliament, and having finished almost every article, he expected a different treatment from that which he had now received. He perceived, he said, no appearance of an upper house, which was necessary to constitute a just tribunal. He alleged that he was himself the king and fountain of law, and consequently could not be tried by laws to which he had never given his assent; that having been intrusted with the liberties of the people, he would not now betray them by recognising a power founded in usurpation; that he was willing, before a proper tribunal, to enter into the particulars of his defence; but that until then he must decline any apology for his innocence, lest he should be considered as the betrayer of, and not as a martyr for, the constitution. Bradshaw, in order to support the authority of the court, insisted that they had received their authority from the people, the source of all right. He pressed the king not to decline the authority of the court which was delegated by the Commons of England, and interrupted, overruled, and browbeat him in his attempts to reply. In this manner the king was three times produced before the court, and as often persisted in declining its jurisdiction. The fourth and last time he was brought before this self-created tribunal, he was insulted on his way thither by the soldiers and the mob, who cried out, "Justice! justice! Execution! execution!" but he continued undaunted. His judges now examined some witnesses, by whom it was proved that the king had appeared in arms against the forces commissioned by parliament, and then pronounced sentence against him. He seemed very anxious at this time to be admitted to a conference with the two houses, and it was supposed that he intended to resign the crown in favour of his son; but the court refused compliance, and considered his request as an artifice to delay justice.

The behaviour of Charles throughout this trying scene was manly, firm, and dignified. In leaving the hall, the soldiers and rabble were again instigated to cry out Justice, and Execution, and to revile him with the most bitter reproaches; and, amongst other insults, one miscreant presumed to spit in his face. He patiently bore their insolence. "Poor souls," said he, "they would treat their generals in the same manner for sixpence." Those of the populace who still retained the feelings of humanity expressed their sorrow in sighs and tears. A soldier more compassionate than the rest could not help imploring a blessing on his royal head. An officer overhearing him, struck the honest sentinel to the ground before the king, who could not help saying that the punishment exceeded the offence.

On his return to Whitehall, Charles desired permission of the house to see his children, and to be attended in his private devotions by Dr Juxon, late bishop of London. These requests were granted, and three days were also allowed him to prepare for execution. Every night between his sentence and execution the king slept soundly as usual, though the noise of the workmen employed in erecting the scaffold continually resounded in his ears. The fatal morning having at last arrived, Charles rose early; and calling one of his attendants, bade him employ more than usual care in dressing him, and preparing him for so great a solemnity. The street before Whitehall was the place destined for his execution; for it was intended in this way to increase the severity of his punishment. He was led through the banquetting house to the scaffold adjoining to that edifice, attended by his friend and servant Bishop Juxon, a man of the same mild and steady character as his master. The scaffold, covered with black, was guarded by a regiment of soldiers under the command of Colonel Tomlinson; and on it were to be seen the block, the axe, and two executioners in masks. The people, in crowds, stood at a distance. The king sur-

veyed all these solemn preparations with composure; and, as he could not expect to be heard by the people at a distance, he addressed himself to the few persons who stood round him. He there justified his own innocence in the late fatal wars, observing that he had not taken arms till after the parliament had shown him the example; and that he had no other object in his warlike preparations, than to preserve that authority entire which had been transmitted to him by his ancestors. But, though innocent towards his people, he acknowledged the equity of his execution in the eyes of his Maker, and owned that he was justly punished for having consented to the execution of an unjust sentence against the Earl of Strafford. He forgave all his enemies; exhorted the people to return to their obedience, and acknowledge his son as his successor; and signified his attachment to the Protestant religion as professed by the church of England. So strong was the impression made by his dying words on those who could hear him, that Colonel Tomlinson himself, to whose care he had been committed, acknowledged himself a convert. At one blow his head was severed from his body. The other executioner then, holding up the head, exclaimed, "This is the head of a traitor."

It is impossible to describe the grief, indignation, and astonishment, which took place, not only among the spectators, who were overwhelmed with a flood of sorrow, but throughout the whole nation, as soon as the report of this execution was conveyed to them. Each blamed himself, either with active disloyalty to the king, or a passive compliance with his destroyers. The very pulpits which used to resound with insolence and sedition were now bedewed with tears of repentance; and all united in their detestation of those dark hypocrites, who, to satisfy their own enmity, involved a whole nation in the guilt of this catastrophe. Charles was executed on the 30th of January 1649, in the forty-ninth year of his age, and twenty-fourth of his reign. He was of a middling stature, robust, and well-proportioned. His countenance was pleasant, but melancholy; and it is probable that the continual troubles in which he was involved might have given this expression to his features. As it had been remarked that the king, the moment before he stretched out his neck to the executioner, had addressed to Juxon, with a very earnest accent, the single word "*Remember*," great mysteries were supposed to be concealed under that word; and the generals vehemently insisted with the prelate that he should inform them of the king's meaning. Juxon told them that the king, having frequently charged him to inculcate on his son the forgiveness of his murderers, had taken this opportunity, in the last moment of his life, when his commands, he supposed, would be regarded as sacred and inviolable, to reiterate that desire; and that his mild spirit thus terminated its earthly course by an act of benevolence to his greatest enemies.

CHAP. V.

THE COMMONWEALTH.

Dissolution of the Monarchy, and establishment of the Commonwealth.—Council of State.—Negotiations with Prince Charles.—Descent of Montrose in the North.—His defeat and execution.—Arrival of Charles in Scotland.—His treatment there.—The Scots proclaim him King.—War with England.—Battle of Dunbar.—Subsequent operations.—The Scots march into England.—Battle of Worcester.—Adventures of the King, and his escape into France.—Cromwell's policy towards Scotland.—War with the Dutch.—Cromwell resolves to seize on the Sovereign power.—Parliament turned out.—Protest of Bradshaw and the Council.—Barebone's Parliament.—Dissolved.—Cromwell declared Protector.—Settlement of the Government.—His vigorous administration.—Jamaica conquered.—Arbitrary

Common-
wealth.

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methods of raising money.—Another Parliament called.—The Crown offered to Cromwell.—Refused.—Situation to which he was reduced by the frequent conspiracies of the Royalists and the Levellers.—His death and character.—Richard Cromwell declared Protector.—His abdication.—Rump Parliament reinstated.—Dissolved by the army.—Military Government.—Proceedings of Monk.—Negotiations.—March to London.—His quarters established in Westminster.—City of London punished.—Secluded Members of Parliament recalled.—New Parliament assembled.—Charles II. leaves Spain.—His message to the Parliament.—He is recalled, and lands in England.—Character of Monk's proceedings in the matter of the Restoration.

The dissolution of the monarchy followed, as a natural consequence, the execution of the king. At the commencement of the struggle the demands of the two houses were limited to the redress of existing grievances; but now when it was over, the triumphant party refused to be content with any thing less than the abolition of the old, and the establishment of a new and more popular form of government. They had sinned too deeply against royalty to trust themselves to the mercy or moderation of a king. A republic was therefore their choice, first, because it promised to shelter them from the vengeance of their enemies; and, secondly, because it offered them the additional advantage of sharing among themselves all the power, the patronage, and the emoluments of office. In accordance with this decision, the head of the king had no sooner fallen on the scaffold at Whitehall, than a proclamation was issued, declaring it treason to give to any person the title of king without the authority of parliament; and at the same time was published the vote of the 4th of January (1649), by which it had been decreed that the supreme authority in the nation resided in the representatives of the people. The peers, though aware of their approaching fate, met on the day fixed at their adjournment, and proceeded to business; but after a pause of a few days the Commons voted that the House of Lords, as useless and dangerous, ought to be abolished; and they declared it high treason to acknowledge Charles Stuart, son of the late king, as successor to the throne. A council of state was next appointed, consisting of forty-one members, with powers limited in duration to twelve months, and charged with the preservation of domestic tranquillity, the disposal of the military and naval force, the superintendence of internal and external trade, and the negotiation of treaties with foreign powers. A new great seal was then made, on one side of which were engraved the arms of England and Ireland, with this inscription, "The great seal of England;" and on the reverse was represented the House of Commons sitting, with this motto,—“On the first year of freedom, by God's blessing restored, 1649.” The forms of all public business were changed, and instead of proceeding in the king's name, ran in that of the “keepers of the liberties of England.” The Court of King's Bench was called the Court of Public Bench; and so cautious on this head, it is said, were some of the republicans, that, in reciting the Lord's prayer, they would not say, “thy kingdom,” but “thy commonwealth, come.” The king's statue in the exchange was thrown down; and on the pedestal these words were inscribed, *Exit tyrannus, regum ultimus*, “The tyrant is gone, the last of the kings.” The merit or demerit of thus erecting a commonwealth on the ruins of the monarchy belongs chiefly to Cromwell, Ireton, Bradshaw, and Marten, who by their superior influence guided and controlled the opinions and passions of their associates in the senate and the army.

The Commons next proceeded to punish those who had been most remarkable for their attachment to their late sovereign. The Duke of Hamilton, Lord Capel, and the Earl of Holland, were condemned and executed; the Earl

of Norwich and Sir John Owen were also condemned, and afterwards pardoned. These executions greatly irritated the Scots; and the insolence of the Independents, with their victories, inflaming them still more, they determined to acknowledge Prince Charles as their king, but at the same time to abridge his power by limitations similar to those which they had attempted to impose upon his father. But as Argyll and the more rigid Covenanters still predominated, they made their loyalty conditional on his own good behaviour. The first propositions were made to Charles at Paris, where he had passed some time in hopes of obtaining assistance; and renewed offers were made to him at Breda, to which place he had withdrawn on finding France indisposed to lend him any aid. But as he had by this time commanded Montrose to attempt a descent in his favour upon Scotland by force of arms, he, with the characteristic duplicity of his race, protracted the negotiations until the result of this enterprise should be known. With arms and money furnished by Sweden and Denmark, and accompanied by about six hundred Germans, Montrose, accordingly, arrived in Orkney from Hamburg, and by a compulsory levy of the islanders, raised his force to fourteen hundred men. He then passed over to the mainland of Scotland, where the people, remembering his former cruelties, fled in horror before him. But his career was destined to be a short one. Having advanced beyond the pass of Invercarron, his motley band was surprised by a superior force, surrounded, beaten, and dispersed. Montrose contrived to effect his escape, but having thrown himself on the protection of Macleod of Assynt, he was betrayed by that worthy for a thousand bolis of meal, and being brought prisoner to Edinburgh, he was condemned on his former attainder to be hanged for the space of three hours on a gibbet thirty feet in height, and his limbs were ordered to be stuck up in the principal towns of the kingdom; his head on a spike in Edinburgh, his arms on the gates of Perth or Stirling, his legs on those of Glasgow and Aberdeen, and his body to be interred by the hangman in Boroughmuir, unless the sentence of excommunication by the kirk were previously relaxed. Montrose's defeat and death, however, were productive only of a further limitation of the terms offered to Charles; and as he no longer refused to accept these conditions, and to take the covenant, if required to do so, he embarked with his court in a Dutch fleet, and arrived at the mouth of the Spey. But as the jealousy of the Scots had been roused by the late invasion, the covenant was exacted from him before he was suffered to land. His English attendants, with the exception of a few complying persons, who accommodated themselves to the times, were dismissed; and he was surrounded by the fanatical clergymen, who, though they approached his person in the most respectful manner, launched out in continual invectives on the iniquity of his father's house, the idolatry of his mother, and his own connection with inveterate malignants. Charles pretended to listen to their discourses, but nevertheless made an attempt to escape. Being overtaken, however, and brought back, he owned the greatness of his fault, and testified his repentance for what he had done.

Cromwell, in the mean time, having been appointed by the parliament to command the army in Ireland, prosecuted the war in that kingdom with his usual success. He had to encounter the royalists commanded by the Duke of Ormond, and the native Irish led on by O'Neale. But he quickly overcame their force; and most of the towns, intimidated by his energy, opened their gates at his approach. He was on the point of reducing the whole kingdom, when he was recalled by the parliament to defend his country against the Scots, who had raised a considerable army in support of the royal cause.

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As Fairfax had conscientiously declined to draw his sword against the Presbyterians of Scotland, Cromwell received the command of the forces destined to invade that kingdom, and, in a month from the time of the king's arrival, he was on the banks of the Tweed at the head of sixteen thousand veteran troops. Argyll, then at the head of the committee of estates, made the most vigorous preparations for his reception; while Leslie, who had never yet been beaten, opposed his great experience and cool sagacity to the genius of Cromwell. The latter, having established between Edinburgh and Leith a fortified camp, as a secure rallying point, wasted the Merse and the Lothians, in order to deprive Cromwell of subsistence; and when forced at length to retire within his entrenchments, he remained resolutely on the defensive, in spite of every expedient tried by his adversary to draw him out to action. At this time the king arrived at the Scottish headquarters, but his presence having excited the jealousy of the clergy, they ordered him to leave it, and forthwith proceeded to purge the camp of four thousand Malignants and Engagers, the only soldiers of credit and experience in the army; so that being now a host of saints, they concluded, somewhat hastily, that they could not be beaten. In the blindness of their folly, they murmured at their prudent general; and, in the extravagance of their fanaticism, they expostulated with the Lord in prayer on the urgent necessity of his interposition, in order to uphold the kirk, and deliver them from the sectaries. An opportunity of striking a blow to advantage having presented itself on a Sunday, Leslie proposed instantly to attack; but he was prevented by these insane fanatics, who affected great horror at the crime of Sabbath-breaking. Meanwhile Cromwell, straitened for provisions, withdrew his army, now reduced in numbers by sickness, to Dunbar. Leslie followed his movement, and encamped on the heights which command the town, taking care at the same time to occupy the passes by which alone the enemy could retire to Berwick. Cromwell's situation had become now most critical. His adversary's position was too strong to be assaulted with any hope of success; his retreat was intercepted; his provisions were nearly exhausted; sickness was daily thinning his ranks; destruction brooded over him. But the madness of the clergy restored the ascendancy of this extraordinary man's fortune, and snatched from Leslie the fruits of his masterly combinations, when he was on the very eve of reaping them in a bloodless harvest of victory. They had been wrestling with the Lord in prayer, as they termed it, and pretending some special revelation, they now fancied that they had obtained the victory, and that the heretical army, together with Agag their general, would forthwith be delivered into their hands. These holy idiots, accordingly, forced their general to descend to the plain, and to attack the English. When Cromwell discovered through his glass that the Scots were actually in motion, he exclaimed, "They are coming down; the Lord hath delivered them into our hands." His anticipation was speedily realised. Descending from the hills during a tempestuous night, which had extinguished their matches, the Scots, consisting entirely of raw undisciplined levies, were overthrown at the first onset by the veteran troops of Cromwell, who had been carefully sheltered from the storm; three thousand were slain, nine hundred made prisoners, and the remainder dispersed, whilst the loss of the English scarcely exceeded forty men.

This disaster, so richly merited, showed, in a striking point of view, the danger of disunion. In a meeting held at Perth, the Scottish parliament accordingly resolved to call in the aid of the Malignants and Engagers, on condition of repentance of past errors; but two of the western

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shires still held out against this approximation of parties, and withdrew from the general levy about five thousand men. Charles had by this time become thoroughly satisfied that soothing the religious prejudices of the kirk was indispensable to give him a chance of acquiring due preponderance in the state. On the first of January 1651, his coronation was performed with great solemnity at Scone. There, on his bended knees, and with his arm upraised, he swore by the Eternal and Almighty God to observe strictly the two covenants; to establish the Presbyterian government in Scotland and in his own family; to give his assent to acts for establishing it in his other dominions; to rule according to the law of God, and the venerated laws of the land; to abolish and withstand all false religions; and to root out heretics and enemies to the true God, when convicted as such by the kirk. Argyll then placed the crown upon the king's head, an act for which his own was afterwards the forfeit; and having seated him on the throne, both nobility and gentry swore allegiance, "according to the national covenant, and the solemn league and covenant."

In the meanwhile Cromwell was making rapid progress in subduing the kingdom. He had obtained possession of Edinburgh Castle, taken Tantallon by storm, attempted Dumbarton, though without success, and carried many places of inferior note. A severe attack of ague for a time retarded his operations; but in the month of July he marched with his army towards Stirling. The Scots faced him in their entrenched camp at Torwood, and resolved to pursue the same cautious conduct observed by Leslie till it had been so fatally overruled by the clergy. After observing them for a time, Cromwell withdrew to Glasgow, and the Scots took up a position at Kilsyth: he retrograded to Falkirk, and his opponents returned to their camp at Torwood. Both parties had now resumed the respective positions which they had originally occupied; but the aspect of affairs had materially changed. Whilst the attention of the Scots was engaged by the enemy in their front, a body of men had crossed the Frith in boats, and, having fortified a hill near Inverkeithing, were immediately followed by Lambert at the head of a powerful division. Holburn was dispatched from the camp at Torwood, with orders to drive the enemy into the sea; but being suddenly charged by Lambert at the head of a superior force, he was routed and put to flight. Cromwell then transported his army to the left bank of the river, and advanced on the rear of the Scots, who, in consequence, retired from the position which had thus been completely turned. The progress of the English excited the most fearful anticipations in the minds of the Scottish leaders; to Charles it suggested the execution of a project which he had long meditated, namely, to march into England, accompanied by such of his subjects of Scotland as were willing to share in the toils and perils of the enterprise. This scheme was opposed by Argyll and a few other chieftains, who regarded it as utterly desperate; but the king was inflexible; and the rest having expressed their readiness to stake their lives on the issue of the attempt, twelve thousand men began their march from Stirling, in the direction of Carlisle, and gained three days in advance before the movement was discovered.

Cromwell was surprised and embarrassed: he had not calculated on such a daring adventure, and his army was unprepared to follow at a moment's notice. But exerting all the energies of his powerful mind, he quickly assembled a large force, more formidable even for its quality than its numerical strength, and set out in quest of the fugitive invaders, who had met with none of the support upon which they had so confidently reckoned, either from the English royalists or Presbyterians. At last the Scot-

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tish army, which had thrown itself into Worcester, was attacked by Cromwell at the head of thirty thousand men, and, after a desperate contest, completely defeated. The battle was fought on the 3d of September 1651, the day on which, twelve months before, the English general had defeated the Scots at Dunbar. In the morning, Fleetwood, who had advanced from Upton to Powick, received orders to force the passage of the Team; whilst Cromwell, in order to preserve his communications, threw a bridge of boats across the Severn at Bunshill, near the confluence of the two rivers. The operations necessarily occupied a considerable time, and at one o'clock in the afternoon the attack was not fully developed. About this time, while Charles with his staff was reconnoitring the positions of the enemy from the tower of the cathedral, a fire of musketry was heard in the direction of Powick. He descended immediately, and riding to the scene of action, ordered Montgomery with a brigade of horse and foot to defend the line of the Team, and oppose the construction of the bridge. But it was now too late. After a hard struggle Fleetwood effected a passage, at the moment when Cromwell, having completed the bridge, moved four regiments to his assistance. The Scots, though attacked by superior numbers, made a gallant resistance, disputing every field and hedge, repeatedly charging with the pike, and struggling to protract the contest in the hope of preventing Fleetwood from effecting a junction with Cromwell. Meanwhile the latter having secured the communication across the river, directed a battery to open upon Fort Royal, a work lately raised to cover the Sidbury gate of the town, and, under cover of its fire, moved his troops in two divisions to Perrywood and Redhill. With great promptitude Charles immediately marched the whole of his disposable infantry, the Duke of Hamilton's troops of horse, and some volunteers, to attack one of these divisions, while the other was still separated from it by the Severn; and fortune smiled on his first efforts. The English militia recoiled from the shock, and some guns were taken by the royalists. But Cromwell had placed in reserve some veteran battalions, who soon restored the battle, and forced the royalists to retreat in their turn. Still they remained unbroken; availing themselves of every advantage of ground to check the advance of the enemy, and anxiously expecting the arrival of the cavalry under Leslie, which had remained in the city. Leslie, however, did not appear till it was too late. The infantry, overpowered by superior numbers, were now flying in confusion to the gate protected by the fort. The battle was irretrievably lost. Disorder everywhere prevailed. The enemy assaulted the town on all sides, and, after an unavailing struggle in the streets, completed the victory by the capture of the place, and the annihilation of the whole royalist force.

The king, who had greatly signalled his personal courage during the battle, now entered upon a scene of adventures the most romantic that can be imagined. After cutting off his hair, the better to disguise his person, he worked for some days in the habit of a peasant, making faggots in a wood. He next attempted to retire into Wales, under the conduct of one Pendrel, a poor farmer, who was sincerely attached to his cause; but in this attempt he failed, as every pass was guarded to prevent his escape. Being obliged to return, he met one Careless, who had escaped the carnage at Worcester; and in his company the king was obliged to climb a spreading oak, among the branches of which they lay concealed during the day, while the soldiers of the enemy were heard in pursuit of them below. After this he experienced all the varieties of famine, fatigue, and pain, till he arrived at the house of Colonel Lane, a zealous royalist, in Staffordshire. Here

he deliberated about the means of escaping into France; and Bristol being supposed the most suitable port, it was resolved that he should ride thither before this gentleman's sister, on a visit to a person who lived in the neighbourhood of that city. During this journey the king every day met with persons whose faces he knew, and at one time passed through a whole regiment of the enemy's army. But on finding that, for a month to come, no ship would sail from Bristol either for France or Spain, he was obliged to go elsewhere for a passage. He therefore repaired to the house of Colonel Wyndham in Dorsetshire, where he was cordially received; and thence pursuing his journey to the sea-side, he once more had a narrow escape at an inn, where he tarried for the night. The day had been appointed for a solemn fast; and a weaver, who had been a soldier in the parliamentary army, was preaching against the king in a little chapel fronting the house. To avoid suspicion, Charles was himself among the audience. But it happened that a smith, of the same principles with the weaver, had been examining the horses belonging to the passengers, and came to assure the preacher that he knew by the fashion of the shoes that one of the strangers' horses came from the north. The preacher immediately affirmed that this horse could belong to no other than Charles Stuart, and instantly went with a constable to search the inn. But the king had taken timely precautions, and left the inn before the constable's arrival. At Shoreham, in Sussex, a vessel was at last found, in which he embarked. He was known to so many, that if he had not set sail at that critical moment, it would have been impossible for him to escape. After forty-one days' concealment he arrived safely at Feschamp in Normandy. No fewer than forty persons of both sexes had at different times been privy to his escape, although a reward of a thousand pounds was offered for his person.

In the mean time Cromwell returned in triumph, leaving Ludlow to improve the victory; and his first care was to depress the Scots, on account of their having "withstood the work of the gospel," as he called it. An act was passed for abolishing royalty in Scotland, and annexing that kingdom as a province to the English commonwealth. It was, however, permitted to send some members to the English parliament; judges were appointed to distribute justice; and the people of that country, now freed from the tyranny of the ecclesiastics, were not much dissatisfied with the government.

All parts of the British dominions being now reduced to perfect subjection to the parliament, they next resolved to chastise the Dutch, who had given some cause for complaint. It happened that Dorislaus, one of the late king's judges, being sent by the parliament as their envoy to Holland, was assassinated by one of the royal party who had taken refuge there; and some time after, Mr St John, appointed their ambassador to that court, was insulted by the friends of the Prince of Orange. These were judged sufficient grounds for a declaration of war against Holland by the commonwealth of England. The parliament's chief dependence lay in the activity and courage of Blake their admiral, who, although he had not entered the navy till late in life, yet surpassed all who went before him in courage and skill. On the other side, the Dutch opposed to him Van Tromp, justly celebrated for his bold and enterprising genius. Many engagements took place between these renowned commanders with various success; but these fierce encounters served rather to show the excellency of the admirals than to determine their superiority. At last the Dutch, who experienced many disadvantages by the loss of their trade, and by the total suspension of their fisheries, were willing to treat of a peace. The parliament, however, gave an evasive answer, and studied to

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But this remarkable man quickly perceived their designs, and, secure in the attachment of the army, resolved to seize the sovereign power. He persuaded the officers to present a petition for payment of arrears and redress of grievances. His orders were obeyed. A petition was drawn up and presented, in which the officers, after demanding their arrears, desired the parliament to consider how many years they had sat, and what professions they had formerly made of their intention to new-model the house, and establish freedom upon the broadest basis. They alleged, that it was now full time to give place to others; that, however meritorious their actions might have been, yet the rest of the nation had some right, in their turn, to manifest their patriotism in defence of their country. The house was highly offended, and appointed a committee to prepare an act, declaring that all persons who presented such petitions for the future should be deemed guilty of high treason. Against this the officers warmly remonstrated, and the parliament as angrily replied. Cromwell, informed of the altercation, started up in the utmost seeming fury, and turning to Major Vernon, cried out "that he was compelled to do a thing that made the very hair of his head stand on end." Then hastening to the house at the head of three hundred soldiers, and with marks of violent indignation on his countenance, he entered, took his place, and attended to the debates for some time. But when the question was about to be put, he suddenly started up, and, after some general remarks, began to load the parliament with the bitterest reproaches for their tyranny, ambition, oppression, and robbery of the public. Having finished his harangue, he stamped with his foot on the ground, which was the preconcerted signal for the soldiers to enter; and the place was immediately filled with armed men. He then turned, and again addressing himself to the members, said, "For shame, get you gone; give place to honest men, those who will more faithfully discharge their trust. You are no longer a parliament; I tell you, you are no longer a parliament; the Lord has done with you." Sir Harry Vane exclaiming against this conduct, "Sir Harry," cried Cromwell with a loud voice, "O Sir Harry Vane; the Lord deliver me from Sir Harry Vane." Then taking hold of one of the members by his cloak, he exclaimed, "Thou art a whoremaster;" to another he said, "Thou art an adulterer;" to a third, "Thou art a drunkard;" to a fourth, "Thou art a glutton;" and afterwards selecting different members in succession, he described them as dishonest and corrupt livers, a shame and scandal to the profession of the gospel. Suddenly checking himself, however, he turned to the guard and ordered them to clear the house. At these words Colonel Harrison took the Speaker by the hands and led him from the chair; Algernon Sidney was next compelled to quit his seat; and the other members, eighty in number, on the approach of the military, rose and moved towards the door. Cromwell now resumed his discourse. "It is you," he exclaimed, "that have forced me to do this. I have sought the Lord both day and night, that he would rather slay me than put me on the doing of this work." Then pointing to the mace, "Take away that fool's bauble," cried he; after which he cleared the hall, ordered the doors to be locked, and putting the keys in his pocket, returned to Whitehall. In the afternoon the members of the council of state assembled at their usual place of meeting. As Bradshaw took the chair, however, the lord-general entered and told them, that if they were there as private individuals they were welcome,

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The whole civil and military power of the state now centred in Cromwell, who, by this bold transaction, became, in effect, king of Great Britain, with uncontrollable authority. Desirous, however, to amuse the people with the form of a commonwealth, he proposed to give his subjects a parliament, but such a one as should be altogether obedient to his commands. For this purpose it was decreed that the sovereign power should be vested in a hundred and forty-four persons, under the denomination of a parliament; and the lord-general undertook to select them himself. The persons pitched upon were the lowest, meanest, and most ignorant of the citizens, and the very dregs of the fanatics. To go farther than others in the absurdities of fanaticism was the chief qualification upon which each of these valued himself. Their very names, borrowed from scripture, and rendered ridiculous by their misapplication, served to show their excess of folly. One of them particularly, a canting leather-seller, called Praise-God-Barebone, gave his name to this odd assembly, which was called Barebone's Parliament. They were principally composed of Antinomians, a sect which, after receiving the spirit, supposed themselves incapable of error, and fifth-monarchy men, who every hour expected Christ's second coming on earth. They began by choosing eight of their number to seek the Lord in prayer, while the rest calmly sat down to deliberate upon the suppression of the clergy, the universities, and courts of justice; and besides all this, it was their intention to substitute the law of Moses in the room of the law of the land.

It was impossible such a legislature as this could stand; even the vulgar exclaimed against it, and Cromwell himself began to be ashamed of its absurdities. He had carefully chosen many persons among the members who were entirely devoted to his interests, and these he commanded to dismiss the assembly. They accordingly met by concert earlier than the rest of their fraternity; and observing to each other that this parliament had sat long enough, they hastened to Cromwell, with Rouse, their Speaker, at their head, and into his hands resigned the authority with which he had invested them. Cromwell accepted their resignation with pleasure; but being told that some of their number showed themselves refractory, he sent Colonel White to clear the house of such as ventured to remain there. They had placed one Moyer in the chair by the time the colonel arrived; and he being asked by the colonel what they did there, replied very gravely, "That they were seeking the Lord." "Then you may go elsewhere," rejoined Colonel White, "for, to my certain knowledge, the Lord hath not been here these many years."

This shadow of a parliament being thus dissolved, the

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officers, by their own authority, declared Cromwell protector of the Commonwealth of England. The mayor and aldermen were sent for to give solemnity to his appointment, and he was installed into his new office at Whitehall, in the palace of the kings of England. He was to be addressed by the title of Highness; and his power was proclaimed in London, and in other parts of the kingdom. It was now, indeed, in a great measure necessary that some person should take the supreme command; for affairs had been brought into such a situation, by the furious animosities of the contending parties, that nothing short of absolute power could prevent a renewal of bloodshed and confusion. The government of the kingdom was adjusted in the following manner. A council was appointed, which was not to exceed twenty-one, nor fall below thirteen persons, who were to enjoy their offices for life, or during good behaviour; and, in case of a vacancy, the remaining members were to name three, of whom the protector was to choose one. The protector was appointed the supreme magistrate of the Commonwealth, with powers such as the king was formerly possessed of. The power of the sword was vested in him jointly with the parliament when sitting, or with the council at other times. He was obliged to summon a parliament once every three years, and to allow them to sit five months without adjournment. The standing army was fixed at twenty thousand foot and ten thousand horse, and funds were assigned for their support. The protector was to enjoy his office for life, and on his death his place was to be supplied by the council. Of all these clauses, that in regard to the standing army was alone sufficient for Cromwell's purpose; for, while possessed of that instrument, he could at any time mould the rest of the constitution to his pleasure. He chose his council from among his officers, who had been the companions of his dangers and victories, and to each of them he assigned a pension of a thousand pounds a year. He took care to have his troops, upon whose fidelity he depended for support, paid a month in advance. The magazines were also well provided, and the public treasure was managed with frugality and attention; whilst by his activity, vigilance, and resolution, he discovered every conspiracy against his person, and every plot for an insurrection, before they took effect.

Thus Cromwell continued to govern, though without assuming the title of king, in as absolute a manner as the most despotic prince in Europe. As he was feared at home, so he made himself respected abroad. The Dutch, humbled by repeated defeats, were obliged to sue for peace; to consent to pay deference to the British flag; to abandon the interests of the king; to pay £85,000 as an indemnification for former expenses; and to restore to the English East India Company a part of those dominions which they had been dispossessed of by the Dutch during the former reign. The ministry of France thought proper to pay court to the protector; and as he had furnished that court with a body of six thousand men to attack the Spanish dominions in the Netherlands, the French put Dunkirk into his hands as a reward for his attachment. By means of the fleet under Blake he humbled Spain and chastised the Algerines and Tunisians. Penn and Venables, two other admirals, made an attempt on the island of Hispaniola; but failing in this, they steered to Jamaica, which was surrendered to them without a blow. Yet so little was thought of this conquest at the time, that, on their return, the two admirals were committed to the Tower, by reason of the failure of the principal object of their expedition.

It is not to be supposed that a numerous standing army could be maintained, and so many foreign wars carried on, without incurring extraordinary expenses. In fact, the

protector's revenues were so much exhausted, that he was obliged to have recourse to methods which he probably would not have chosen had he not been driven to them by necessity. One or two royalist conspiracies, though detected and punished, served him as a pretext for imposing a tax upon that party, of the tenth penny on all their possessions; and in order to raise this oppressive impost, ten major-generals were instituted, who divided the whole kingdom into as many military jurisdictions. They had power to subject whom they pleased to this tax, and to imprison such as denied their jurisdiction. Under colour of these powers they exercised the most arbitrary authority; the people had no protection against their exactions; the very mask of liberty was entirely thrown off; and all property was placed at the disposal of a military tribunal. It was in vain that the nation cried out for a free parliament. Cromwell assembled one in consequence of their clamours, but as speedily dissolved it when he found it refractory to his commands. At last, as parliaments were always held in such estimation by the people, he resolved to give them one, but such as should be entirely of his own choosing, and chiefly composed of his creatures. Lest any of a different description should enter the house, guards were placed at the doors, and none admitted but such as produced a warrant from his council.

The principal design of convening this assembly was to offer him the crown, with the title of king, and all the other ensigns of royalty. His creatures, therefore, took care to insinuate the confusion which existed in legal proceedings without the name of a king; that no man was acquainted with the extent or limits of the authority of the present magistrates; but that those of a king had been well ascertained by the experience of ages. The motion was at last formally made in the house, easily carried through, and nothing seemed now wanting but Cromwell's own consent to have his name enrolled among those of the kings of England. This consent, however, he had not resolution enough to give. His doubts continued for some days; and the conference carried on with the members who had made him the offer, as far as it is intelligible on his part, seems to argue that he was desirous of being compelled to accept the offer. The conference, however, terminated in his total refusal.

But with all these proffered honours, and with all his despotic power, the situation of Cromwell was far from being enviable. Perhaps no situation, however mean or contemptible, was more truly distressing than his, even at the time when the nation was loading him with congratulations and addresses. He had at last rendered himself hateful to every party, and he owed his safety solely to their mutual hatred and distrust. His arts of dissimulation were exhausted; none could be any longer deceived by them; and even those of his own party and principles disdained the use to which he had converted his zeal and professions. Though the whole nation silently detested his administration, he would not have been completely wretched if he could have found domestic consolation. But even his own family had embraced republican principles with so much vehemence, that they could not without indignation behold him invested with uncontrolled power; and even Mrs Claypole, his favourite daughter, upbraided him, on her death-bed, with all the crimes by which he had waded "through slaughter to a throne." To aggravate all this, conspiracies were formed against him; and it was at last openly taught, that his death was not only desirable, but that his assassination would be meritorious. A book was published by one Colonel Titus, a man who had formerly been attached to his cause, entitled "Killing no Murder." Of all the pamphlets which appeared at that time, or which have since been published,

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The protector now found, that the grandeur to which he had sacrificed his former tranquillity was only an inlet to fresh inquietudes. He was haunted with perpetual apprehensions of assassination. He wore armour under his clothes, and always kept pistols in his pockets. His aspect was clouded by a settled gloom, and he regarded every stranger with suspicion. He was always attended by a numerous guard, and generally travelled in a hurry. He never returned from any place by the road he went; and never slept above three nights together in the same chamber. At last, however, he was delivered from this life of horror and anxiety by a tertian ague, of which he died on the 3d of September 1658, after having held the reins of government nine years.¹

"Till the commencement of the present century," says Dr Lingard, "when that wonderful man arose who, by the splendour of his victories and the extent of his empire, cast all preceding adventurers into the shade, the name of Cromwell stood without a parallel in the history of civilized Europe. Men looked with a feeling of awe on the fortunate individual who, without the aid of birth, wealth, or connections, was able to seize the government of three powerful kingdoms, and to impose the yoke of servitude on the necks of the very men who had fought in his company to emancipate themselves from the less arbitrary sway of their hereditary sovereigns. That he who accomplished this was no ordinary person, all must admit; and yet, on close investigation, we shall discover little that was sublime or dazzling in his character. Cromwell was not the meteor which surprises and astounds by the brilliancy and rapidity of its course. Cool, cautious, calculating, he stole on with slow and measured pace, and, while with secret pleasure he toiled up the ascent to greatness, laboured to persuade the spectators that he was reluctantly borne forward by an exterior and resistless force, by the march of events, the necessities of the state, the will of the army, and even the decree of the Almighty. He looked upon dissimulation as the perfection of human wisdom, and made it the key-stone of the arch on which he built his fortunes. The aspirations of his ambition were concealed under the pretence of attachment to the 'good old cause,' and his secret workings to acquire the sovereignty for himself and his family were represented as endeavours to secure for his former brethren in arms the blessings of civil and religious freedom, the two great objects which originally called them into the field. Thus his whole conduct was made up of artifice and deceit. He laid his plans long beforehand; he studied the views and dispositions of all from whose influence he had anything to hope or to fear; and he employed every expedient to win their affections, and to make them the blind unconscious tools of his policy. For this purpose he asked questions, or threw out insinuations in their hearing; now kept them aloof with an air of reserve and dignity; now put them off their guard by condescension, perhaps by buffoonery; at one time addressed himself to their vanity or avarice, at another exposed to them with tears (for tears he had at will) the calamities of the nation; and then, when he found them moulded to his purpose, instead of assenting to the advice which he had himself suggested, feigned reluctance, urged objections, and pleaded scruples of con-

science. At length he yielded; but it was not till he had acquired by his resistance the praise of moderation, and the right of attributing his acquiescence to their impotency rather than to his own ambition.

"Exposed as he was to the continual machinations of the royalists and levellers, both equally eager to precipitate him from the height to which he had attained, Cromwell made it his great object to secure to himself the attachment of the army. To it he owed the acquisition, through it alone could he insure the permanence, of his power. Now, fortunately for his purpose, that army, composed as never was army before or since, revered in the lord-protector what it valued mostly in itself, the cant and practice of religious enthusiasm." "In minds thus disposed, it was not difficult to create a persuasion that the final triumph of 'their cause' depended on the authority of the general under whom they had conquered; while the full enjoyment of that religious freedom which they so highly prized rendered them less jealous of the arbitrary power which he occasionally assumed. In his public speeches he perpetually reminded them, that if religion was not the original cause of the late civil war, 'yet God soon brought it to that issue;' that amidst the strife of battle, and the difficulties and dangers of war, the reward to which they looked was freedom of conscience; that this freedom to its full extent they enjoyed under his government, though they could never obtain it till they placed the supreme power in his hands. The merit which he thus arrogated to himself was admitted to be his due by the great body of the saints: it became the spell by which he rendered them blind to his ambition and obedient to his will; the engine by which he raised, and afterwards secured, the fabric of his power.

"On the subject of civil freedom the protector could not assume so bold a tone. He acknowledged, indeed, its importance; it was second only to religious freedom: but if second, then, in the event of competition, it ought to yield to the first. He contended that under his government every provision had been made for the preservation of the rights of individuals, as far as was consistent with the safety of the whole nation. He had reformed the chancery, he had laboured to abolish the abuses of the law, he had placed learned and upright judges on the bench, and he had been careful in all ordinary cases that impartial justice should be administered between the parties. This was indeed true; but it was also true that by his orders men were arrested and committed without lawful cause; that juries were packed; that prisoners, acquitted at their trial, were sent into confinement beyond the jurisdiction of the courts; that taxes had been raised without the authority of parliament; that a most unconstitutional tribunal, the high court of justice, had been established; and that the major-generals had been invested with powers the most arbitrary and oppressive.

"Some writers have maintained that Cromwell dissembled in religion as well as in politics; and that when he condescended to act the part of the saint, he assumed for interested purposes a character which he otherwise despised. But this supposition is contradicted by the uniform tenor of his life. Long before he turned his attention to the disputes between the king and the parliament, religious enthusiasm had made a deep impression on his mind; it continually manifested itself during his long career both

¹ The night on which Cromwell died was stormy. "The violence of the wind increased till it blew a hurricane. Trees were torn from their roots in the park, and houses unroofed in the city. So strange a coincidence could not fail of exciting remarks in a superstitious age; and though the storm reached to the coasts of the Mediterranean, in England it was universally referred to the death of the protector. His friends asserted that God would not remove so great a man from the world without previously warning the nation of its approaching loss; the cavaliers more maliciously maintained that the devils, 'the princes of the air, were congregating over Whitehall, that they might pounce on the protector's soul.'" (Lingard, *History of England*, vol. vii. p. 273. London, 1829, 4to.)

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in the senate and the field; and it was strikingly displayed in his speeches and prayers on the last evening of his life. It should, however, be observed, that he made religion harmonize with ambition.¹

Oliver Cromwell was succeeded in his office of protector by his son Richard, who immediately called a parliament. To this assembly the army presented a remonstrance, desiring to have some person appointed for their general in whom they could confide. But the house voted such meetings and remonstrances unlawful; upon which the officers, surrounding Richard's house, forced him to dissolve the parliament; and he soon afterwards signed an abdication of the government. His younger brother Henry, who had been appointed to the command in Ireland, followed Richard's example, and resigned his commission without striking a blow.

The officers, thus left at liberty, resolved to restore the Rump Parliament, as it was called, consisting of that remnant of a parliament which had condemned Charles. But no sooner were they reinstated in authority, than they began to humble the army by cashiering some of the officers, and appointing in their room others on whom they could place more reliance. The officers, accordingly, resolved to dissolve the assembly. For this purpose Lambert, one of the general officers, drew together a chosen body of troops, and, placing them in the streets which led to Westminster Hall, when the Speaker, Lenthall, proceeded in his carriage to the house, he ordered the horses to be turned, and very civilly conducted him home. The other members were likewise intercepted; and the army returned to their quarters to observe a solemn fast, which generally either preceded or attended all their remarkable proceedings. A committee was then elected, of twenty-three persons, of whom seven were officers. These they invested with sovereign authority; and a military government was established, which gave the nation a prospect of endless servitude and tyranny without redress.

Upon learning that the officers had by their own authority dissolved the parliament, General Monk, who was then in Scotland with eight thousand veteran troops, protested against the measure, and resolved to defend the national privileges. As soon as he had put his army in motion, he found himself eagerly courted by all parties; but so cautious was he of declaring his mind, that, till the very last, no one knew which side he would take. As a remarkable instance of this politic or hesitating behaviour, when his own brother came to him with a message from Lord Granville in the name of the king, he refused all conversation with him upon hearing that he had told his errand to Mr Price, the general's own chaplain, and a man of known probity and honour.

Informed that the officers were preparing an army to oppose him, Monk amused them with negotiations; and the people, finding themselves not entirely defenceless, began to declare for a free parliament. The Rump, being invited by the navy and part of the army, again ventured to resume their seats, and to thunder votes in their turn against the officers and that party of the army by which they had been ejected. Without taking any notice of Lambert, they sent orders to the troops to repair immediately to the garrisons appointed for them. The soldiers obeyed; and Lambert at last found himself deserted by his whole army. Monk in the mean time proceeded with his army to London. The gentry, on his march, flocked round him with addresses, expressing their desire of a new parliament; but that general, still continuing his inflexible taciturnity, at last reached to St Alban's, within a few miles

of the capital, leaving all the world in doubt as to his motives and designs. Here he sent the parliament a message, desiring them to remove such forces as remained in London to country quarters. Some of the regiments willingly obeyed this order; and such as did not, Monk turned out by force; after which he took up his quarters in Westminster. The house voted him thanks for his services. He desired them to call a free parliament; and this soon inspired the citizens with courage to refuse submission to the present government. They resolved to pay no taxes until the members formerly excluded by Colonel Pride should be replaced. But for this they were punished by Monk, at the desire of the parliament. He arrested eleven of the most obnoxious of the common council; broke the gates and portcullises, and, having exposed London to the scorn and contempt of all who hated it, he returned in triumph to his quarters at Westminster. The next day, however, he made an apology for this conduct, and promised for the future to co-operate with the mayor and common-council in such schemes as they should approve.

The Commons were now greatly alarmed. They tried every method to detach the general from his new alliance; some of them even promised to invest him with the dignity of supreme magistrate, and to support his usurpation. But Monk was too cunning or too-wise to hearken to such proposals; he resolved to restore the secluded members, and by their means to bring about a new election. The restoration of the expelled members was easily effected; and their number was so much superior to that of the Rump, that the chiefs of this last party now withdrew in their turn. The restored members began with repealing all the orders by which they had been expelled. They renewed and enlarged the general's commission; fixed a proper stipend for the support of the fleet and army; and, having passed these votes, dissolved themselves, giving orders for the immediate assembling of a new parliament. Meanwhile Monk new-modelled his army to the purposes he had in view; and some officers, by his direction, presented him with an address, in which they promised to obey implicitly the orders of the ensuing parliament. He approved of this engagement, which he ordered to be signed by all the different regiments; and this furnished him with a pretence for dismissing all the officers by whom it was rejected.

In the midst of these transactions, Lambert, who had been confined in the Tower, escaped from prison, and began to raise forces; and as his activity and principles were sufficiently known, Monk took prompt measures to oppose his proceedings. He dispatched Colonel Ingoldsby, with his own regiment, against Lambert, before the latter had time to assemble his dependents. With four troops of horse Lambert had taken possession of Daventry; but the greater part of them having joined Ingoldsby, Lambert also surrendered, not without exhibiting strong marks of pusillanimity.

All this time Monk still persisted in his reserve; nor had he intrusted his secret intentions to any person except one Morris, a gentleman of Devonshire. The latter was of a sedentary and studious disposition; and with him alone had the general deliberated on the great and dangerous enterprise of the restoration. Sir John Granville, who had a commission from the king, applied for access to the general; but he was desired to communicate his business to Morris. Granville refused, though twice urged, to deliver his message to any but the general himself; upon which Monk, finding he could depend on this mi-

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Corbon- nister's secrecy, opened to him his whole intentions, but, with his usual caution, refused to commit any thing to paper. In consequence of these overtures the king left the Spanish territories, but very narrowly escaped being detained at Breda by the governor, under pretence of treating him with proper respect and formality. From this he retired to Holland, where he resolved to wait the course of events.

The new parliament being assembled, Sir Harbottle Grimstone was chosen Speaker, a man known to be a royalist in his heart. The eyes of all were now turned towards the king; yet such were their fears, and such the dangers which attended freedom of speech, that for some days no one ventured to make any mention of his name. At length Monk gave directions to Annesley, president of the council, to inform them that one Sir John Granville, a servant of the king's, had been sent over by his majesty, and was now at the door with a letter to the House of Commons. After some manœuvring, this message was received, Granville was called in, the letter read, and the king's proposals accepted of. He offered a general amnesty to all persons whatsoever, and that without any other exceptions than should be made by parliament. He promised to indulge scrupulous consciences with liberty in matters of religion; to leave to the examination of parliament the claims of all such as possessed lands with contested titles; to confirm all these concessions by act of parliament; to satisfy the army under General Monk with respect to their arrears; and to give the same rank to his officers when they were enlisted in the king's army.

In consequence of this agreement between the king and the parliament, Montague, the English admiral, waited on Charles, to inform him that the fleet expected his orders at Scheveling. The Duke of York immediately went on board, and took the command as lord high admiral. The king embarked without delay, and landing at Dover, was received by Monk, whom he honoured with particular marks of attention. He entered London on the 29th of May 1660, which was his birth-day; and was attended by a great number of people, who testified their joy, as the multitude commonly do on such occasions, by loud acclamations.

"That the re-establishment of royalty was a blessing to the country," says Dr Lingard, "will hardly be denied. It presented the best, perhaps the only, means of restoring public tranquillity, amidst the confusion and distrust, the animosities and hatreds, the parties and interests, which had been generated by the civil war, and by a rapid succession of opposite and ephemeral governments. To Monk belongs the merit of having, by his foresight and caution, effected this desirable object without bloodshed or violence: but to his dispraise it must also be recorded, that he effected it without any previous stipulation on the part of the exiled monarch. Never had so fair an opportunity been offered of establishing a compact between the sovereign and the people, of determining by mutual consent the legal rights of the crown, and securing from future encroachment the freedom of the people. That Charles would have consented to such conditions, we have sufficient evidence; but when the measure was proposed, the lord-general declared himself its most determined opponent. It may have been that his cautious mind figured to itself danger in delay; it is more probable that he sought to give additional value to his services in the eyes of the new sovereign. But, whatever were the motives of his conduct, the result was, that the king ascended the throne unfettered with conditions, and thence inferred

that he was entitled to all the powers claimed by his father at the commencement of the civil war. In a few years the consequence became manifest. It was found that by the negligence or perfidy of Monk a door had been left open to the recurrence of dissension between the crown and the people; and that very circumstance which Charles had hailed as the consummation of his good fortune, served only to prepare the way for a second revolution, which ended in the permanent exclusion of his family from the government of these kingdoms."¹

CHAP. VI.

REIGN OF CHARLES II.

Charles II.—His first measures popular.—The regicides punished.—Indignities offered to the remains of Cromwell, Ireton, and Bradshaw.—Death of the Duke of Gloucester.—Parliament dissolved.—State of the nation.—Profligacy and ingratitude of the King.—Slavish disposition of Parliament.—King's extravagance.—Marriage with the Infanta of Portugal.—War with the Dutch.—Naval engagements.—Action off Lowestoffe.—Battle of the Four Days.—Negociations.—The Dutch fleet appears in the Medway and the Thames.—Plague in London.—Great Fire.—Peace with Holland.—Clarendon disgraced.—The triple alliance.—Arbitrary proceedings of the King.—The Cabal.—Renewal of the war with Holland.—Desperate naval battle in Southwold Bay.—Successes of the French king against the Dutch.—Meeting of Parliament.—Test Act.—Bold procedure of the Commons.—National Discontents.—Popish Plot.—Impeachment of Danby.—Exclusion Bill brought in.—Duke of York returns to England.—Petitioners and Abhorers.—Whig and Tory.—Attempt to establish Episcopacy in Scotland.—Persecution of the Presbyterians.—Rising at Pentland.—Insurgents defeated.—Cruelties exercised by Archbishop Sharpe.—Act against Conventicles.—Scheme of Comprehension and Indulgence.—The King takes out lawburrows against his subjects.—Letters of Intercommuning.—Trial and execution of James Mitchell.—Infamous conduct of the Privy Council.—Murder of Archbishop Sharpe.—Second Insurrection.—Insurgents defeated at Botliwell Bridge.—Parliamentary proceedings.—Parliament dissolved, and a new one summoned to meet at Oxford.—Case of Fitzharris.—Parliament dissolved.—Arbitrary proceedings of the King.—Fitzharris condemned and executed.—Spies, informers, suborners, and plotters.—Bill of indictment against Shaftesbury ignored by the Grand Jury.—Affairs in Scotland.—Cameron and Cargill declare war on the government.—Skirmish at Airmoss.—Cargill excommunicates the King and the Ministers at Torwood.—Subsequent atrocities.—Insidious and diabolical proceeding of the Council.—Trial of the Earl of Argyll.—London deprived of its Charters.—Compositions entered into by other Corporations.—Designs against the King.—The Rye-house Plot.—Consequent proceedings.—Death of Charles II.—His character.

Charles II. was thirty years of age at the time of his restoration. Being naturally of an engaging countenance, and possessed of an open, affable disposition, he became a favourite with all classes of his subjects. They had now experienced all the miseries of anarchy, and in proportion to these was the satisfaction they felt on the accession of the young monarch. His first measures were also calculated to give general satisfaction. He seemed desirous of obliterating the memory of past animosities, and of uniting every party in affection for their prince and country. He admitted into his council the most eminent men of the nation, without regard to former distinctions. The Presbyterians shared this honour equally with the royalists. Calamy and Baxter, presbyterian clergymen, were even made chaplains to the king. Admiral Montague was created Earl of Sandwich, and General Monk Duke of Albemarle. Morris, the general's friend, was appointed secretary of state. The choice which the king at first made of his principal ministers and favourites, was, in like man-

¹ *History of England*, vol. vii. pp. 342, 343.

Reign of Charles II. ner, popular. Sir Edward Hyde, created Earl of Clarendon, was made prime minister and chancellor; the Marquis, created Duke of Ormond, was named steward of the household; the Earl of Southampton became high-treasurer; and Sir Edward Nicholas secretary of state. These men, united in the strictest bonds of friendship, supported each other's credit, and for a time steadily pursued the interests of the public.

The parliament having been summoned without the king's consent, received at first only the title of a Convention; and it was not until after an act had passed for that purpose that they were acknowledged by the name of a Parliament. Both houses acknowledged the guilt of the former rebellion, and gratefully received in their own name, and in that of all the subjects, his majesty's gracious pardon and indemnity. The king having before promised an indemnity to all criminals, excepting such as should be excluded by parliament, he now issued a proclamation, declaring, that such of the late king's judges as did not surrender themselves within fourteen days should receive no pardon. Nineteen surrendered themselves; some were taken in their flight; and others escaped beyond sea. The Peers seemed inclined to great severity on this occasion, but were restrained by the king, who, in terms apparently the most earnest, pressed the act of general indemnity.

After repeated solicitations, the act of indemnity passed both houses, with the exception of those who had an immediate hand in the king's death. Even Cromwell, Ireton, and Bradshaw, though dead, were considered as proper objects of resentment. Their bodies were dug from their graves, dragged to the place of execution, and, after hanging some time, buried under the gallows. Of the rest who had sat in judgment on the late monarch's trial, some were dead, and others thought worthy of pardon. Ten only out of eighty were doomed to immediate destruction. These were enthusiasts who had all along acted from principle, and who, in the general spirit of rage excited against them, showed a fortitude which would have done honour to any cause.

This was all the blood that was shed at the restoration. The rest of the king's judges were reprieved, and afterwards dispersed in several prisons. The army which had for so many years governed the nation was now disbanded, and prelacy, with all the ceremonies of the church of England, was at the same time restored; yet the king pretended to preserve the air of moderation and neutrality. In regard to religion, Charles, in his gayer hours, was a professed deist; but in the latter part of his life he showed an inclination to the Catholic persuasion, which he had strongly imbibed in his infancy and exile.

On the 13th of September this year died the young Duke of Gloucester, a prince of some promise. The king was never so deeply affected by any incident in his life. The Princess of Orange, also, having come to England, in order to share the joy attending the restoration of her family, with whom she lived in great friendship, soon afterwards sickened and died. The queen-mother paid a visit to her son, and obtained his consent to the marriage of the Princess Henrietta with the Duke of Orleans, brother to the French king. The parliament having met on the 6th of November, and carried on business with the greatest unanimity and dispatch, was dissolved by the king on the 29th of December 1660.

During the reign of Charles II. the spirit of the people seemed to take a turn quite opposite to that which it had exhibited in the time of his father. The latter found his subjects animated with a fierce though often ill-regulated zeal for liberty. They knew not what it was to be free, and therefore imagined that liberty consisted in throwing off entirely the royal authority. After a bloody and pro-

tracted struggle they carried their point; the unhappy Reign of monarch was dethroned and put to death; but instead of liberty they found themselves involved in the meshes of a more formidable tyranny than that which they had overthrown. From this, however, they were freed by the restoration; but they now ran into the contrary extreme; and instead of an unbounded spirit of opposition, there was nothing but an unbounded spirit of submission, through which Charles at length found means to render himself almost quite absolute, and to govern without requiring, or indeed without having any occasion for, parliaments. A similar revolution, or rather revulsion, took place in matters connected with religion. During the former reigns a spirit of the most gloomy enthusiasm had overspread the whole island, and men imagined that the Deity was only to be appeased by their denying themselves all social pleasure, and resisting every thing which tended to make life agreeable. The proceedings of Cromwell and his associates, to say nothing of the conduct of others, showed that this was not genuine religion; but, in avoiding one error, they ran into another equally dangerous. Every thing religious or serious was now discountenanced; riot and dissipation everywhere prevailed. The court set the example. Nothing but scenes of gallantry and festivity were to be seen; the horrors of the late war became the subject of ridicule; the formality of the sectaries was displayed on the stage, and even laughed at from the pulpit; in a word, the best mode in religion now was to have as little as possible, and, in deriding the hypocrisy of the sectaries, to transgress even the common duties of morality. In the midst of this riot and dissipation, the old and faithful followers of the royal family were left unrewarded. Numbers who had fought both for the king and his father, and had lost their whole fortunes in his service, were suffered to pine in want and oblivion; whilst their persecutors, who had acquired fortunes during the civil war, were permitted to enjoy them without molestation. The wretched royalists petitioned and murmured in vain. The monarch fled from their expostulations to scenes of mirth and festivity: and the act of indemnity was with some reason described as an act of forgiveness to the king's enemies, and of oblivion to his friends.

In 1661 the Scottish and English parliaments vied with each other in protestations of loyalty and attachment to the king. In England, monarchy and episcopacy were raised to the greatest splendour. The bishops were permitted to resume their seats in the House of Peers, and all military authority was acknowledged to be vested in the king. He was empowered to appoint commissioners for regulating corporations, and expelling such members as had intruded themselves by violence, or professed principles dangerous to the constitution. An act of uniformity was passed, by which it was required that every clergyman should be re-ordained, if he had not before received episcopal ordination; that he should declare his consent to every thing contained in the Book of Common Prayer, and should take the oath of canonical obedience. In consequence of this law, above two thousand of the presbyterian clergy resigned their cures at once. In Scotland the right of the king was asserted in the fullest and most positive terms to be hereditary, divine, and indefeasible. His power was extended to the lives and possessions of his subjects, and his original grant was held to be the source whence all that they enjoyed was derived. They voted him an additional revenue of £40,000; and all the former violences were spoken of in terms of the utmost detestation.

But this intoxication of loyalty soon began to wear off. The king's profusion and extravagance in his pleasures, together with his indolence in administration, furnished

of opportunities of making very disadvantageous comparisons between him and Oliver Cromwell. And these dispositions were increased by the ejection of so many ministers, and also by observing Dunkirk, which had been acquired during Cromwell's vigorous administration, sold to the French for L.40,000, and that merely to supply the king's extravagance. From this time, August 1662, Charles found himself perpetually opposed; and his parliaments granted supplies much more reluctantly than before.

A few months previously, the continual exigencies of the king had forced him to conclude a marriage with the Infanta of Portugal, for the sake of her portion, which was to be L.500,000 in money, together with the fortress of Tangier in Africa, and that of Bombay in the East Indies. The Lord Chancellor Clarendon, and the Dukes of Ormond and Southampton, urged many reasons against this match, particularly the likelihood of her never having any children; but all their objections were fruitless, and therefore Clarendon, like a true courtier, set himself to promote it as far as lay in his power. But the king's necessities being still greater than his supplies could meet, he resolved to sacrifice his minister, Clarendon, to the resentment of the parliament, to whom he had become obnoxious, in order to procure more money. In 1663 an extraordinary supply was demanded. On the 12th of June the king sent for the Commons to Whitehall; and having complained of their inattention, he informed them of a conspiracy which had been formed to seize the castle of Dublin, hoping by this means to furnish a reason for demanding a present supply. The artifice succeeded. Four subsidies were immediately granted, and the clergy in convocation followed the example of the Commons. On this occasion the Earl of Bristol ventured to impeach the Chancellor in the House of Peers; but as he did not support his charge, the affair was dropped for the present.

In 1664 Charles was induced to declare war against the Dutch, with the view, probably, of getting the money to be employed for that purpose into his own hands. In this war the English, under the command of Sir Robert Holmes, expelled the Dutch from Cape Coast Castle in Africa, and likewise seized on their settlements of Cape Verd and the Isle of Goree. Sailing thence to America, the admiral took possession of Nova Belgia, since called New York, and long afterwards a dependency of Britain. On the other hand, De Ruyter, the Dutch admiral, dispossessed the English of all their settlements in Guinea except Cape Coast. He afterwards sailed to America, where he attacked Barbadoes and Long Island, but was at last repulsed.

At length a battle between the grand fleets of each nation was fought near Lowestoffe on the 3d of June 1665, the one under the Duke of York, to the number of a hundred and fourteen sail; the other commanded by Opdam, admiral of the Dutch navy, of nearly equal force. The English fleet was divided into three squadrons; the red, under the command of the duke; the white, under that of Prince Rupert; and the blue, under the Earl of Sandwich. James hoisted his flag on board the Royal Charles. The Dutch fleet sailed in seven divisions, comprising one hundred and thirteen ships. The bravest and noblest of the Dutch youths had repaired on board to share the dangers of the expedition; and as the admiral had received positive orders to fight, every heart beat high with the hope of victory. But Opdam did not share this confidence. In the inexperience of many of his captains, and the insufficiency of their crews, this able seaman discovered enough to make him doubt the result of the coming battle; and to those near him he observed, "I know what prudence would suggest; but I must obey my orders, and by this time to-morrow you shall see me crown-

ed with laurel or with cypress." Early in the morning of the 3d the hostile fleets descried each other near Lowestoffe, and seven hours were spent in attempts on each side to gain the weather-gage. At length the English, tacking in the same direction as the enemy, soon pushed alongside of them, in a parallel line, upon which the signal was made for each ship to bear down and engage her opposite in the enemy's fleet. The sea was calm and the sky cloudless, but a slight breeze which blew from the south-west facilitated the execution of the duke's order. The two nations fought with their characteristic obstinacy, and during four hours the issue hung in suspense. On one occasion the duke was in imminent peril. All the ships of the red squadron except two had dropped out of the line to refit and prepare again for action, and the weight of the enemy's fire was poured into the flag-ship. The Earl of Falmouth, Lord Muskerry, and Boyle, son to the Earl of Burlington, were killed by the same shot, and James was bespattered with their blood. But the disabled ships gradually resumed their stations in the line; and as the fire of the English began to increase, that of the enemy was observed to slacken. At length the Eendracht, bearing Opdam's flag, blew up, and the admiral with five hundred men perished in the explosion. Dismayed at the loss of their commander, the Dutch fled in confusion. Four of their sternmost ships running foul of each other, were destroyed by a fire-ship, and three others shortly afterwards experienced the same fate. Van Tromp endeavoured to keep the fugitive ships together; and as the darkness of the night retarded pursuit, the Dutch fleet in the morning was moored in safety within the shallows. In this battle the enemy lost four admirals, seven thousand men slain or made prisoners, and eighteen sail either burnt or taken. The loss of the victors was small in proportion, not exceeding six hundred men.

This success excited the jealousy of the neighbouring states, particularly France and Denmark, who immediately resolved to protect the republic against such a formidable enemy. De Ruyter, the great Dutch admiral, on his return from Guinea, was appointed, at the head of seventy-six sail, to join the Duke of Beaufort, the admiral, who it was supposed was then entering the British channel from Toulon. The Duke of Albemarle (Monk) and Prince Rupert now commanded the British fleet, which did not exceed seventy-four sail. Albemarle detached Prince Rupert with twenty ships to oppose the Duke of Beaufort; a piece of rashness against which Sir George Ayscue protested in vain. The fleets thus engaged on most unequal terms, and the memorable battle of the Four Days ensued. The first day the Dutch admiral Evertzen was killed by a cannon-ball, one of their ships was blown up, and three of the English ships were taken; darkness parted the combatants. The second day the battle was renewed with incredible fury. Sixteen fresh ships joined the Dutch; and the English were so shattered that their fighting ships were reduced to twenty-eight. They retreated towards their own coast, followed by the Dutch; and another fierce conflict commenced, but was put a stop to by the darkness of the night. In the morning of the third day the English continued their retreat, and the Dutch their pursuit. Albemarle came to the desperate resolution of blowing up his own ship rather than submit to the enemy, when he found himself happily reinforced by Prince Rupert with his squadron of twenty sail. By this time, however, it was night; but the next day, being the fourth, the fleets came again to close action, which was continued with great fury till they were parted by a mist. Sir George Ayscue had the misfortune to strike on the Galoper Sand, where he was taken, with a ship, the Prince Royal, of a hundred guns. Both sides claim-

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This success brought on negotiations, which were protracted on various pretexts. The English exchequer was completely drained, and to prepare the fleet for sea again required an immediate supply of money. Parliament had indeed made a grant for the public service; but, though liberal in amount, it offered only a distant resource. In these circumstances it was, in an evil hour, proposed to lay up the larger ships in ordinary, and to equip two squadrons of light frigates for harassing the enemy's trade in the Channel and the German Ocean; and although the Duke of York stated that such a proceeding was in truth tantamount to an abandonment of the sovereignty of the sea, the difficulty of procuring money, and the expectation of a speedy peace, weighed so much with the king and council, as to obtain their consent to a measure which brought lasting disgrace on the government and the country. It was in fact disarming, and inviting attack. Nor did the enemies of England forego the opportunity which was thus offered. A secret treaty was on the eve of being concluded between that country and France; and four out of the seven United Provinces, desirous of peace, resolved to withdraw their contributions towards the expenses of the war. But the pensionary, De Witt, still thirsted for revenge. The Dutch fleet being ready for sea, whilst that of England was dismantled and in the docks, he determined not to throw away the opportunity which fortune had placed in his hands. The English argued, and the French remonstrated, but the pensionary continued inexorable. He left the Texel in company with De Ruyter, and ordered the fleet, to the amount of seventy, to join him in separate squadrons off the Nore. The English government was not taken altogether by surprise. The warnings of the Duke of York had awakened them to a sense of their danger; and three months before orders had been issued to strengthen the fortifications at Sheerness, to throw a boom across the Medway at the stakes, to mount guns on the batteries, and to prepare a number of fire-ships. But these orders were very ill executed. The commissioners of the navy were already a million in debt; their credit was gone; to procure ready money, either by application to the treasury, or by loan from the bankers, was impossible; and, without immediate payment, the sailors refused to serve, the labourers to work, and the merchants to sell. Little had therefore been done, and that little imperfectly. Meanwhile De Witt, in order to distract the attention of the government, ordered one division of his fleet to sail up the Thames as far as Gravesend, and the other to destroy the shipping in the Medway. The works at Sheerness opposed but a feeble resistance, and were levelled with the ground by a few broadsides. At the first alarm, Monk hastened to the mouth of the Medway, where he erected batteries, moored guard-ships for the protection of the boom, and sunk five ships before it in the narrowest part of the channel. He had scarcely completed these preparations, when the Dutch advanced with the wind and tide in their favour; but the obstructions in the main passage proved insurmountable; and they were forced to drop away with the ebb. In the night, however, they discovered another channel deep enough for large ships at high water, and in the morning worked their way through without impediment. The foremost ships then opened their

fire on the batteries, while a heavy fire-ship running against the boom, hung upon it, and a second following in her wake, it broke under their united pressure. The guard-ships were soon in a blaze, and the Royal Charles, a first-rate, became the prize of the assailants. Finding all his efforts here fruitless, Monk hastened back to Upnor Castle, and employed the night in mounting guns, collecting ammunition, and manning the batteries. Morning revealed a most humiliating spectacle, the Dutch fleet advancing triumphantly up the river. Two line-of-battle ships led the line; then came six enormous fire-ships; which, at a short distance, were followed by the rest of the squadron. The men of war anchored to receive and return the fire of the batteries on either bank; the fire-ships passed between them, and speedily set fire to the Royal James, the Oak, and the London, three first-rates. Indescribable consternation reigned in the capital. It was fully expected that the Dutch would sail up next tide to London Bridge, destroy the whole shipping, and reduce the metropolis to a heap of ruins. At the ebb, however, their commander, Van Ghent, made the signal to the fleet to fall down the river, and having burnt two of his vessels which had grounded, he rejoined the other division at the Nore. The disgrace which had thus been inflicted on England, so lately mistress of the seas, sunk deep in the hearts of the people. Unable to conceive how the Dutch, whom they had so often defeated, should ride triumphant in their rivers, burn their ships, and fill with dismay the capital and the country, their grief and indignation knew no bounds; and whilst many attributed the calamity to the imaginary machinations of the Catholics, others believed that the king had secretly leagued with the enemy to depress the nation, that he might the more easily establish a despotic government.

During these transactions London was desolated by one of the most calamitous visitations ever experienced by this or any other nation. In the winter of 1664, two or three isolated cases of plague had occurred in the outskirts of the metropolis, and excited general alarm; but it was not till about the end of May 1665, that, under the malignant influence of excessive heat, and a close, stagnant atmosphere, the evil burst forth in all its terrors. From the centre of St Giles the infection spread with rapidity over the adjacent parishes, threatened the court at Whitehall, and, in spite of every precaution, crept into the city. A general panic ensued. The nobility and gentry fled; the royal family followed; and all who had the power or the means prepared to imitate their example. By every outlet the tide of emigration flowed towards the country, till it was checked by the lord mayor refusing to grant certificates of health, and by the opposition of the neighbouring townships, which rose in their own defence, and drove back the fugitives into the devoted city. The absence of the wealthier class of citizens, and the consequent breaking up of establishments, with the cessation of trade, served to aggravate the calamity; and although the charity of the opulent seemed to keep pace with the progress of the pestilence, forty thousand servants were left without a home, and the number of artisans and labourers thrown out of employment was still more considerable. The mortality was at first confined to the lower classes, carrying off a larger proportion of children than of adults, and of females than males; but, by the end of June, its diffusion became so rapid, its virulence so great, and its ravages so destructive, that the civil authorities, in virtue of the powers with which they had been invested by an act of James I. "for the charitable relief and ordering of persons infected with the plague," divided the parishes into districts, allotting to each a competent number of officers; and ordered a red cross, one foot in length, to be

sign of painted on the door of every infected house, with the words "Lord have mercy on us" placed above it, that the healthy might be warned of the existence of the disease. Provision was also made for the interment of the dead. In the day-time persons were always on the watch to withdraw from public view the bodies of those who expired in the street; during the night the tinkling of a bell, accompanied with the lurid glare of torches, announced the approach of the pest-cart making its melancholy round to receive the victims of the previous twenty-four hours. "No coffins were prepared; no funeral service was read; no mourners were permitted to follow the remains of their relatives and friends. The cart proceeded to the nearest cemetery, and shot its burden into the common grave, a deep and spacious pit, capable of holding some scores of bodies, and dug in the church-yard, or, when the church-yard was full, in the outskirts of the parish."

The distemper generally manifested itself by the febrile symptoms of shivering, nausea, headach, and delirium; but in some these affections were so mild as to be mistaken for a slight and transient indisposition. The insidious approaches of the mortal foe were not discovered, and the patient applied to his usual avocations, till suddenly faintness seized him, the fatal "tokens" or plague-spots appeared on his breast, and then his hour was come. In most cases, however, the pain and delirium left no room for doubt. The sufferings of the patients were dreadful, and often threw them into paroxysms of frenzy, during which they burst the bands that confined them to their beds, precipitated themselves from the windows, ran naked into the street, and plunged into the river. If the patient survived till the third or fourth day, buboes appeared, and when these could be made to suppurate recovery might be anticipated; but if the efforts of nature and the physician proved unavailing, death became inevitable. Men of the strongest minds were lost in amazement when they contemplated the woe and desolation wrought by the pestilence; the timid and credulous became the dupes of their own imaginations and the victims of their own terrors; whilst fanaticism scattered abroad its wild predictions and fierce denunciations to add to the inexpressible horror of the scene. During the months of July and August, when the weather was sultry and the heat oppressive, the eastern parishes, which had at first been spared, became the chief seat of the pestilence, and the substantial citizens suffered in common with their poorer neighbours. The regulations of the magistrates could now no longer be enforced. The nights were insufficient for the burial of the dead; coffins were borne along the street at all hours of the day; and the poor burst from their infected dwellings to seek relief for their families, who were perishing of famine as well as of the pestilence. "London," says Dr Lingard, in a passage worthy of Thucydides, "presented a wide and heart-rending scene of misery and desolation. Rows of houses stood tenantless and open to the winds; others, in almost equal numbers, exhibited the red cross flaming on the doors. The chief thoroughfares, so lately trodden by the feet of thousands, were overgrown with grass. The few individuals who ventured abroad walked in the middle, and, when they met, declined on opposite sides, to avoid the contact of each other. But if the solitude and stillness of the streets impressed the mind with awe, there was something yet more appalling in the sounds which occasionally burst upon the ear. At one moment were heard the ravings of delirium or the wail of woe from the infected dwelling; at another the merry song or the loud and careless laugh from the was-sailers at the tavern or the inmates of the brothel. Men became so familiarised with the form, that they steeled their feelings against the terrors, of death. They waited

each for his turn with the resignation of the Christian or the indifference of the Stoic. Some devoted themselves to the exercises of piety; others sought relief in the riot of dissipation or the recklessness of despair."

In September the heat of the atmosphere abated; but, contrary to expectation, the mortality increased. From this time infection became the certain harbinger of death, which followed often within the space of twenty-four hours, generally in the course of three days. An experiment, grounded on the practice of former times, was now ordered to be tried. Fires of sea-coal, in the proportion of one to every twelve houses, were kindled in the streets, courts, and alleys of London and Westminster, and were kept burning three days and nights, till a heavy, continuous rain extinguished them. By the supposed disinfecting power of heat, it was hoped to dissipate the pestilential miasm, or at least to abate its virulence; and, in fact, the next report exhibited a considerable diminution in the number of deaths. But whilst the survivors were congratulating themselves on the prospect of deliverance, the destroying angel was scattering a fiercer pestilence from his wings. In the following week, ten thousand victims sank under the accumulated virulence of the disease, and despair reigned in every heart. Yet even now, in this lowest depth of human misery, deliverance was at hand. The high winds which usually accompany the autumnal equinox cooled and purified the air; the fever assumed a less malignant form; the weekly number of deaths successively decreased; in the beginning of December seventy-three parishes were pronounced clear of the disease; and in February the court, attended by the nobility and gentry, returned to Whitehall. Upwards of a hundred thousand individuals are said to have perished in London alone; and as the pestilence extended its destructive sway over the greater part of the kingdom, the fugitives from the metropolis carrying the infection with them wherever they found an asylum, the total amount of its ravages must have been truly dreadful.

This calamity was followed by another, if possible, still more dreadful. On the night of Sunday the 2d of September 1666, a fire broke out in Pudding Lane, near Fish Street, one of the most crowded quarters of the metropolis. It originated in a bakehouse; the buildings in the neighbourhood being constructed of wood, with pitched roofs, quickly caught the flames; and the stores with which they were filled consisting of the highly combustible articles used in the equipment of shipping, nourished the conflagration. The pipes from the new river were found empty, and the engine which raised water from the Thames was consumed. No decisive measures were adopted to check the progress of the devouring element, and several hours elapsed before the aid of the military was called for. Meanwhile the wind, which during the day blew from the east, augmented hourly in violence, and became a perfect hurricane. The fire spread with astonishing velocity, leaping as it were from roof to roof, and frequently igniting houses at a distance; "the night was as light as day for ten miles round;" a vast column or pillar of fire, about a mile in diameter, ascended to the clouds; the flames, as they rose, were bent, broken, and shivered, by the fury of the tempest; and every blast scattered through the air flakes of fire, which, falling on inflammable materials, kindled new conflagrations. The lurid red glare of the sky, the scorching heat of the atmosphere, the roaring of the flames, and the frequent crash of falling buildings, combined to fill every breast with astonishment and terror. While the storm raged, the conflagration bade defiance to every effort of human ingenuity or power. Houses had been blown up or demolished, and gaps thus made, in hopes of arresting the progress of the flames; but ignited flakes

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were carried over the empty space, or the ruins again took fire, or the flames unexpectedly turned in a new direction. On the evening of Wednesday the violence of the wind began to abate; and the church of the Temple, as well as Westminster Abbey and Whitehall, were saved by the destruction of the neighbouring buildings. Towards the evening of Thursday the weather became calm, and hopes were entertained that this dreadful calamity was approaching its close. But in the night new alarms were excited. The fire burst out again in the Temple, while it still raged with unabated fury near Cripplegate, and a large body of flame seemed to be making rapid advances towards the Tower. With the aid of gunpowder, however, large openings were made; and as the weather continued calm, the conflagration was thus prevented from extending its ravages, and, in consequence, gradually died out, although months elapsed before the combustion was altogether extinguished in the immense accumulation of ruins. By this deplorable calamity two thirds of London, including the whole space from the Tower to the Temple, were reduced to ashes. The number of houses consumed amounted to thirteen thousand two hundred, and that of churches, including St Paul's, to eighty-nine, covering three hundred and seventy-three acres within, and sixty-three without the walls.

The history of this fire accounts sufficiently for its origin, as well as for the destructive ravages it committed. But at this time political and religious prejudices had perverted the understandings by inflaming the passions of men, and every occurrence was viewed through a false and distorting medium. By some it was considered as an evident visitation of Providence in punishment of sin: but the precise nature of the sin was not agreed upon; the more rigid religionists declaring it to consist in the immorality of the king and the courtiers, whilst the cavaliers were equally positive that nothing but the guilt of the late rebellion could have entailed such a chastisement on the nation. Others, again, attributed it to the disloyalty and revenge, either of the republicans, who sought to destroy the seat of the monarchy, or of the Catholics, who wished to punish the stronghold of Protestant heresy. Of these charges, however, no vestige of proof could ever be discovered; and in the report of the House of Commons, which is still extant, will be found a complete refutation of the calumny. But the men of that time were not to be reasoned out of what they had determined at all hazards to believe; and accordingly, on the monument erected to perpetuate this calamitous event, stands recorded the calumnious falsehood, that "the burning of this Protestant city was begun and carried on by the treachery and malice of the Popish faction." Next to the guilt of him who perpetrates an atrocious crime, says Dr Lingard, is the guilt of those who charge it upon the innocent. One good, however, resulted from this great evil. The plague was fairly burnt out, and the city rose like a phoenix from its ashes; the streets being widened, the narrow and unwholesome alleys totally banished, and the houses built of brick instead of wood. In so frightful a devastation, it is remarkable that not a single life was lost.

These complicated misfortunes did not fail to excite many murmurs among the people. Whilst the blame of the fire was laid on the Papists, the Dutch war was exclaimed against as unsuccessful and unnecessary, and as an attempt to humble that nation, who were equally enemies to Popery with themselves. Charles himself also began to be sensible, that all the ends for which he had undertaken this war were likely to be entirely frustrated. Instead of being able to lay up money for his own purposes, the supplies of parliament had hitherto been so scanty, that he found himself considerably in debt. A treaty was

therefore set on foot, and concluded at Breda on the 21st of July 1667. By this treaty the only advantage gained by Britain was, the cession of the colony of New York. It was therefore accounted disgraceful by the nation, and the blame of it thrown upon the Earl of Clarendon, who, besides, was charged with the sale of Dunkirk, the bad payment of the seamen, the disgrace inflicted by the Dutch fleet, and his own ambition. His daughter, whilst yet in Paris, had countenanced the addresses of the Duke of York, and, under a solemn promise of marriage, had admitted him to the privileges of a husband. James, however, either of his own accord, or through the persuasions of his brother Charles, afterwards married her; and this was imputed as a crime to Clarendon. On these grounds the king, who had never much loved this nobleman, ordered the seals to be taken from him and given to Sir Orlando Bridgeman. Clarendon was again impeached; and though the charges were manifestly frivolous, yet so strong was the popular torrent against him, that he thought proper to withdraw into France. Soon after, Charles formed an alliance with Holland and Sweden, in order to prevent the French king from completing his conquest of the Netherlands, the greatest part of which he had already subdued; and he was unexpectedly stopped in his career by this league, in which it was agreed by the contracting powers to constitute themselves arbiters of the differences between France and Spain, and to check the exorbitant pretensions of both.

The king now began to govern in a very arbitrary manner. He had long wished to extend his prerogative, and to be able to furnish himself with whatever sums he wanted for his pleasures, and he therefore sought ministers who would make no scruple of gratifying him in both particulars. In Clifford, Ashley (afterwards Shaftesbury), Buckingham, Arlington, and Lauderdale, who were distinguished by the term *Cabal*, a word formed from the initials of their names; he found a junta in all respects suited to his wishes. These men, it is probable, were as ready to betray their king as they speedily showed themselves to betray their country; yet it seems pretty evident that they were deceived by their master, who concealed from them the real state of his degrading connection with France, and also the secret of what he was pleased jocosely to denominate his religion. The first effects of the advice given by the Cabal were a secret alliance with France, and a rupture with Holland. The undivided disgrace of both transactions belongs to them, notwithstanding the king had taken a bribe from France, which, however, he kept from the knowledge of his ministers, lest they should claim their share in the wages of infamy. Soon after this the Duke of York declared himself a Catholic; and liberty of conscience was proclaimed to all sectaries, Dissenters as well as Catholics. A proclamation was also issued containing very rigorous clauses in favour of impressment; and at the heels of this came another full of menaces against those who should speak undutifully of his majesty's measures; nay, even against those who heard such discourses, unless they informed in due time against the offenders. These things gave great and just offence to the people; but they were especially alarmed at the alliance with France, and afraid of the perfidy by which the policy of that nation was characterized.

In the meanwhile the Dutch, attacked by Louis on land, and by the combined navies of England and France on sea, and at the same time deserted by their ally Sweden, seemed on the very verge of destruction. But the republic of the United Provinces was not wanting to itself in this crisis. War was declared with Holland on the 17th of March 1672; and by the beginning of May the

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Reign of Charles II. of Dutch fleet put to sea. It consisted of seventy-five men of war, and a considerable number of fire-ships, with which De Ruyter stationed himself between Dover and Calais, to prevent the intended junction of the French and English fleets. The Duke of York lay at the Nore with forty sail, being all he was able to muster; but with this force he contrived, under cover of a fog, to pass the enemy unnoticed, and to reach St Helens, where he awaited the arrival of the French squadron under D'Estrées. When the latter had joined, the combined fleet immediately sailed in quest of the enemy. He was discovered lying off Ostend, but prudently declined to engage even upon equal terms; and baffling all the manœuvres employed to bring him to action, at last reached Goree. The duke then returned to Southwold Bay, in order that his ships might take in their full complement of men and provisions, in both of which they had previously been deficient. Meanwhile De Ruyter, learning the situation and employment of the English, suddenly resolved to become the aggressor; and sailing from Goree with his whole force on the evening of the 27th May, he would probably have surprised his enemies at anchor, had it not been for Cogolin, the captain of a French frigate, who, ignorant of the coast, had anchored during the night at a distance of several miles from Southwold Bay, and having descried two of the Dutch ships in the morning, fired off his guns in succession as a signal of the approach of the enemy. Still the bold and decided advance of De Ruyter had all the effect of a surprise. James, it is true, immediately ordered every ship to get under weigh, and take her station in the line; but the wind being easterly, and the tide running to leeward, not more than twenty sail could form to meet the enemy. The duke, with part of the red squadron, encountered De Ruyter and the fleet from the Maas; the Earl of Sandwich led the blue against Van Ghent and the fleet from Amsterdam; whilst D'Estrées opposed Banker with the ships from Zealand, though, probably from respect for conservative principles, the French commander cautiously avoided coming to close action with his opponent. The battle raged long and fiercely. The English had to contend with a bold, skilful, and experienced enemy, and, owing to the inexplicable inactivity of their French allies, no less than to the suddenness of the attack, they had to make head against a fearful disparity of force. Their ships, becoming intermingled with those of the enemy, could afford each other little support, whilst they were in imminent danger of being overwhelmed by the number of their adversaries. Still they fought with desperate courage, in order to protract their resistance till they could be joined by the remainder of the fleet from the bay. About eleven o'clock the flag-ship, the *Prince*, of one hundred guns, lay a complete wreck on the water, having lost all her rigging and above one third of her crew. Finding her no longer manageable, the duke ordered her to be towed out of the fire, and immediately shifted his flag to the *St Michael* of ninety guns. The gallant Earl of Sandwich was less fortunate. In his ship the *Royal James*, a first-rate, he had repeatedly beat off the enemies by whom he was surrounded; carried by boarding a seventy-gun ship which lay athwart his hawse; and sunk a fire-ship which was drifting towards him. But after a contest of eight hours' duration, the *Royal James* became unmanageable; a second fire-ship now grappled her on the larboard side; and in a few minutes that magnificent vessel was in flames. The duke ordered the *Dartmouth* and a number of boats to hasten to her assistance, and between two and three hundred of the crew were saved; the rest, with their gallant commander, perished in the waves. Meanwhile the other ships joined the fleet, and the combat became more equal. About five the duke shifted his flag from the *St*

Michael, which could with difficulty be kept afloat, to the London, which had sustained less damage, and the battle continued with unabated fury. But, about seven o'clock, De Ruyter shrunk from the conflict, and sailed to overtake the Zealand squadron. The honour of the victory belonged to the English. With all the disadvantages of a surprise, and with wind and tide against them, they encountered a force greatly superior, and, notwithstanding the skill of the Dutch admiral and the bravery of his men, they maintained the combat with that cool determined courage which, when properly directed, nothing under heaven can overcome, and ultimately compelled the enemy to retreat. The English lost one, and the Dutch three ships of the line; but the French suffered very little, not having entered into the heat of the engagement. It was even supposed by some that they had orders to observe this conduct, and to spare their own ships, whilst the Dutch and English weakened each other by their mutual fury in the combat.

The combined powers were more successful against the Dutch by land. Louis carried all before him, crossed the Rhine, took the frontier towns of the enemy, and threatened the new republic with dissolution. Terms were proposed to them by the conquerors. Louis offered them such as would have deprived them of all power of resisting an invasion from France by land; those of Charles would have exposed them equally to invasion by sea. At last the murmurs of the English at seeing this brave and industrious people, the supporters of the Protestant cause, totally sunk and on the brink of destruction, were too loud not to reach the king. He was obliged to call together the Parliament in order to take the sense of the nation respecting his conduct; and he soon found how his subjects stood affected towards him.

The parliament met on the 24th of February 1673. They began with resisting some of the king's extraordinary stretches of prerogative, and taking means for promoting uniformity in religious matters. A law was passed entitled the Test Act, imposing an oath on all who should enjoy any public benefice. Besides taking the oaths of allegiance and supremacy, such persons were obliged to receive the sacrament once a year in the established church, and to abjure all belief in the doctrine of transubstantiation. As the Dissenters also had seconded the efforts of the Commons against the king's declaration of indulgence to Roman Catholics, a bill was passed for their ease and relief, which, however, met with some difficulty in passing through the Peers. The Dutch, in the mean time, continued to defend themselves with such valour, that the Commons began to despair of success. They therefore resolved that the standing army was a grievance; and declared that they would grant no more supplies to carry on the Dutch war, unless it appeared that the enemy were so obstinate as to refuse all reasonable conditions. To cut short these disagreeable altercations, the king resolved to prorogue the parliament; and with that intention he went unexpectedly to the House of Peers, and sent the usher of the black rod to summon the House of Commons to attend. The usher and the Speaker happened to meet nearly at the door of the house; but the Speaker being within, some of the members suddenly shut the door, and cried, "To the chair." It was then moved, and voted by acclamation, that the alliance with France was a grievance, that the evil counsellors of the king were a grievance, and that the Earl of Lauderdale was a grievance; upon which the house rose in great confusion. The king finding that he could expect no supply from the Commons for carrying on a war so unpopular, resolved to make a separate peace with the Dutch, on the terms which they had proposed through the Spanish ambassador; and

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Reign of Charles II. having asked the advice of his parliament, a peace was concluded accordingly.

The prepossession which Charles had all along shown in favour of France, and his manifest inclination upon all occasions to attach himself to that kingdom, had given great offence to his people; and other circumstances also conspired to raise a general discontent. The toleration of Catholics, so much wished for by the king, and the bigotry of the Duke of York, the heir-apparent to the crown, who was zealous for the propagation of the Catholic religion, excited an alarm, not altogether without foundation, that the Protestant religion was in danger. But these fears and discontents were carefully fomented by wicked and designing men, who, to promote their own interests, scrupled not to advance the greatest falsehoods. In 1678 an account of a plot, supposed to have been formed by the Papists, for burning London, putting the Protestants to death, and destroying the king and the Protestant religion, was circulated by one Kirby, a chemist; Tong, a weak, credulous parson; and Titus Oates, who had likewise been a clergyman, and was in reality one of the most abandoned miscreants that ever disgraced humanity. The circumstances attending this pretended discovery were so perfectly incredible and monstrous, that it seems amazing how any person of common sense could give ear to them; yet so violently were the minds of the nation at this time inflamed against the Catholics, that it not only produced the destruction of many individuals of the Romish persuasion, but a general massacre of that unfortunate sect was apprehended. The parliament, who ought to have repressed these delusions, and brought back the people to calm deliberate inquiry, showed themselves even more credulous than the vulgar themselves. The cry of the plot was immediately echoed from one house to the other; the country party could not let slip so favourable an opportunity of managing the passions of the people; and the courtiers were afraid of being thought disloyal if they ventured to doubt the guilt of those who were accused of designs against the king's person. The whole nation was seized by a sort of epidemic madness. Danby, the prime minister, himself entered into it very furiously, and persisted in his inquiries notwithstanding all the king's advices to the contrary; and Charles himself, who was the only person that ought to have been most concerned, was the only one who treated it with contempt. Nothing, however, could check the popular phrenzy; and for a time the king was obliged to give way to it. Meanwhile accident after accident, occurring in a manner unparalleled in history, contributed to maintain the delusion, and to give temporary credibility to the infernal perjuries of Oates, Bedloe, and their associates in infamy. Letters were seized which discovered the Duke of York's correspondence with France, in opposition to the religion and interests of his country; Danby's correspondence, which involved the king in the disgrace of similar machinations, was also detected; and, to crown the whole, Godfrey, the magistrate who had first given publicity to the plot, was either murdered, or, which seems at least equally probable, committed suicide. This last occurrence made every good Protestant imagine that he felt a Catholic poniard at his throat; and, whilst it aggravated the terrors, confirmed the credulity, of the people. The verdict of wilful murder returned by the coroner's inquest on the body of Godfrey imparted the stamp of authority to all the reports previously in circulation. The ignorant believed and trembled, the artful secretly fomented the panic with which the nation was now seized. It was no longer safe to deny that Godfrey had been murdered by the Papists, or that the latter had conspired the destruction of the king, the constitution, and the church of England, with the extermination of every Protestant in the

kingdom. The plot having thus attained a sudden and bloated maturity, it was greedily adopted by the popular party as an engine against the court; and whilst the extraordinary hallucination lasted, every species of injustice and iniquity was perpetrated without compunction or remorse. Coleman, Ireland, Grove, Pickering, and others suffered death for an imaginary conspiracy, on the contradictory testimony of incredible witnesses; and after trials in which the judges and the juries seemed to vie with each other in abetting perjury. Nor was the reign of delusion and blood short-lived. For two years, Protestant credulity and vengeance were satiated, from time to time, with the invention of new horrors and the immolation of fresh victims; nor were these legal murders stayed till the execution of the venerable Lord Viscount Stafford excited pity and remorse in the public mind. This event seems to have contributed to awaken the nation from its trance; the still small voice of reason and humanity began again to be heard; men gradually shook off both the delusion and the panic by which they had been hurried into such excesses; and when they recovered the use of their faculties sufficiently to enable them to take a deliberate survey of the late proceedings, they were horrified alike at the iniquity which had been committed, and at the character of the diabolical miscreants by whose instrumentality it had been effected.

In the midst of this general uproar and persecution, the lord treasurer Danby was impeached in the House of Commons by Seymour the Speaker. The principal charge against him was, his having written a letter to Montague, the king's ambassador at Paris, directing him to sell the king's good offices at the treaty of Nimeguen, to the king of France, for a certain sum of money; contrary to the general interests of the confederates, and also to those of his own kingdom. But although the charge was just, Danby had the good fortune to find the king resolved to defend him. Charles assured the parliament that, as he had acted in every thing by his orders, he held him entirely blameless; and although he would deprive him of all his employments, yet he positively insisted on his personal safety. The Lords, however, still went on to impeach him, and Danby was sent to the Tower; but no worse consequences followed.

These proceedings were carried on by a House of Commons which had continued in existence above seventeen years. They were now dissolved, however, and another parliament was called; but this one proved as unmanageable as the preceding. The members resolved to check the growth of Popery by striking at the root of the evil; and therefore brought in a bill for the total exclusion of the Duke of York from the crown of England and Ireland, which passed the Lower House by a majority of seventy-nine. They next voted the king's standing army and guards to be illegal; and proceeding to fix limits to the king's power of imprisoning delinquents, the celebrated statute of *Habeas Corpus* was passed, which confirms to the subject an absolute security against oppressive power.

During these troubles the Duke of York had retired to Brussels; but an indisposition of the king induced him to return to England, to be ready, in case of accident, to assert his right to the throne. After prevailing with his brother to disgrace his natural son the Duke of Monmouth, who had now become very popular, he set out for Scotland, under pretence of quieting the apprehensions of the English nation, but in reality to strengthen his interests in that part of the kingdom. This proceeding, however, served still more to inflame the country party, who were strongly attached to the Duke of Monmouth, and resolved to support him against the Duke of York. Mobs, petitions, and burnings of the pope in effigy, were the artifices employed to keep up the terrors of the people, and to

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But it was not by plots alone that the adverse parties endeavoured to supplant each other. Tumultuous petitions on the one hand, and adulatory addresses on the other, were sent up from all quarters. Wherever the country party prevailed, petitions were sent to the king, filled with grievances and apprehensions. Wherever the church or court party had the ascendancy, addresses were framed, containing expressions of the highest regard for his majesty, and the deepest abhorrence of those who endeavoured to disturb the public tranquillity. Thus the nation came to be distinguished into Petitioners and Abhorrrers. The names of *Whig* and *Tory*, also, were now first used as terms of reproach. The whigs were so denominated from a cant name given to the Presbyterian conventicles, "whig" being milk turned sour; and the tories received that honourable appellation from the Irish banditti so called, whose usual phrase, in ordering people to stand and deliver, was the Irish word *toree*, "give me."

During all this time the king had tyrannized over the Scots in a very cruel manner. Being apprized of the tendency of Presbyterian principles to a republican form of government, Charles, like his predecessors, had endeavoured to introduce Episcopacy there, but in a much more violent manner than had formerly been attempted. The rights of patrons had for some years been abolished, and the power of electing ministers had been vested in the kirk-sessions and lay elders; but it was now enacted, that all incumbents who had been admitted upon this title should receive a presentation, and be instituted anew by the bishop, under the penalty of deprivation. In consequence of this, three hundred and fifty parishes were at once declared vacant. New ministers were sought for all over the kingdom, and none was too vicious or ignorant to be rejected. The people, as might have been expected, were displeased to the highest degree, but gave no sign of mutiny or sedition, notwithstanding their discontent. This submission made their case still worse; it being rather hastily imagined, that, as they did not complain for a little ill usage, they would submit with equal patience to worse.

Affairs remained tolerably tranquil, till, in 1661, a severe act was passed in England against conventicles, which severity was imitated by the Scottish parliament, who passed an act of the same kind. Military force was next let loose on the people. Wherever they had forsaken their churches, the guards were quartered throughout the country. These legalized banditti were commanded by Sir James Turner, a man of a furious temper and dissolute life, who went about and received lists from the clergy, of those who absented themselves from the churches, or were supposed to frequent conventicles. Without proof or legal conviction, he exacted fines, and quartered soldiers on the supposed criminals till he received payment. An insurrection being dreaded during the Dutch war, new forces were levied, and intrusted to the command of Dalziel and Drummond, two men of savage dispositions, and the Scottish parliament gave full scope to whatever enormities they chose to commit.

Representations were now made to the king, who promised some redress. But his lenity came too late. In 1668 the people rose in arms, and having surprised Turner in Dumfries, resolved to put him to death; but finding his orders much more violent than his execution of them,

they spared his life. At Lanark they renewed the covenant, and published a manifesto, in which they professed submission to the king, and only desired the re-establishment of Presbytery, and the re-instatement of their former ministers. Their force never exceeded two thousand men; and although the country in general bore them great favour, men's spirits were so subdued, that the insurgents could expect no further increase of numbers. Dalziel took the field to oppose them. The number of the Covenanters had now been reduced to little more than a thousand, and these were no way capable of contending with regular forces. Having advanced towards Edinburgh, and met with no support, they attempted to make their way back to the west by the Pentland Hills. But at a spot called Rullion Green, they were attacked by the king's troops, and received the first charge with great firmness. This, however, was the whole action. They immediately fell into confusion and fled. About forty were killed on the spot, and a hundred and thirty taken prisoners.

As long ago as the year 1661 the Presbyterians had deputed Sharpe, then one of their number, to lay their grievances before the king. Instead of doing so, however, their deputy abandoned the cause altogether, became their violent enemy, and, as a reward of his treachery, was created Archbishop of St Andrews. After the affair of Pentland this man was the foremost to take vengeance on the unhappy insurgents, whose oppressed state and inoffensive behaviour made them objects of universal compassion. Ten were hanged on one gibbet in Edinburgh, and thirty-five before their own doors in different parts of the country. Some of them were previously tortured, and, after death, their mutilated limbs were stuck up in different parts of the kingdom. All of them might have saved their lives upon condition of renouncing the covenant; but this they absolutely refused. The executions were proceeding without mercy, when the king wrote a letter to the privy council, in which he ordered that such of the prisoners as simply promised to obey the laws for the future should be set at liberty, and that the incorrigible should be sent to the plantations. This letter was brought to the council by Burnet, but was not immediately delivered by Sharpe, whose renegade vengeance was not yet satiated. It had been customary to put these unfortunate men to the torture, in order if possible to make them confess that to be false which they believed to be true. By Sharpe's criminal delay had been tortured Hugh Maceail, a young preacher, who would otherwise have escaped; and so violent were the torments inflicted on him by the iron boot, that he expired under them. He seemed to die in an ecstasy of joy. His last words, uttered with an accent which struck all the bystanders with astonishment, were in the highest degree impressive and sublime. "Farewell sun, moon, and stars," exclaimed this lofty-minded enthusiast; "farewell world and time; farewell weak, frail body. Welcome eternity; welcome angels and saints; welcome Saviour of the world; and welcome God, the judge of all!"

In 1670 an act was passed against conventicles, with a professed design of mitigating the former persecuting laws, though even the mitigation was oppressive and tyrannical. By this act, the hearer in a conventicle, that is, in a dissenting assembly where more than five persons besides the family were present, was liable to a fine of five shillings for the first offence, and ten shillings for the second; while the preacher was fined twenty pounds for the first offence, and forty for the second. The person in whose house the conventicle assembled was declared subject to the same amount of fine as the preacher. In a remarkable clause it was provided, that if a doubt should arise as to the interpretation of any part of the act, the judges should always explain such doubt in the sense least favourable to

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No religion was ever extirpated by subjecting its professors to imprisonment, confiscation, and death; and the government, which had plunged headlong into all the excesses of persecution, soon perceived that they had produced a very different effect from that which had been intended; that Presbytery had burst forth with fresh vigour in the midst of blood and oppression; and that the people, by being driven desperate, had become formidable. In this situation recourse was had to a notable expedient, which at once betrayed the jealousy of the government, and rendered it ridiculous. From some supposed analogy between the case of one subject dreading bodily harm from another, and a king jealous of his people, Sir George Mackenzie, afterwards king's advocate, conceived the brilliant idea of causing his majesty to take out a general writ of *lauchburrows* against his whole Scottish subjects. Accordingly, a bond of the peace was framed, by which the subscribers became bound, under heavy penalties, neither to frequent conventicles themselves, nor to allow their families and tenants to be present at such unlawful assemblies, and, in general, not in any way to infringe the public peace. By this extraordinary proceeding, the government, while it betrayed its fears, prostituted the dignity of the king, and incurred the ridicule of attempting to give additional sanction to public law by private contract.

But the violent methods used by the king having been found ineffectual to accomplish this purpose in Scotland, a Scheme of Comprehension was tried in 1678, by which it was proposed to diminish greatly the authority of the bishops, to abolish their negative voice in the ecclesiastical courts, and to leave them little more than the right of precedence among the presbyters. But this, too, was rejected by the people, who well knew its character and tendency. The next project was that of an Indulgence, by which the most popular of the expelled preachers, without being required to accede any terms of submission to the established religion, were settled in vacant churches; and small salaries of about twenty pounds a year were offered to the rest till they should be otherwise established. These tardy and suspicious boons were at first accepted by some of the less firm and decided preachers; but the trick,—for it was nothing more,—was soon discovered; and every man's motto became *Timeo Danaos et dona ferentes*. The replaced ministers soon repented their compliance; the bounty was rejected as the wages of criminal silence; conventicles multiplied; and the Covenanters, now at open hostility with the law, met in arms at their places of worship, though, after divine service, they dispersed quietly.

The expedients tried by the government having thus failed, the persecution of the Covenanters was renewed under the administration of Lauderdale, and strenuously abetted by Archbishop Sharpe. By an old law, but seldom put in execution, a man who was accused of any crime, and did not appear to take his trial, might be *intercommuned*, that is, he might be publicly outlawed; and whoever afterwards, either on account of business, relationship, or even charity, had the least intercourse with him,

was subjected to the same penalties which the law inflicted on the criminal himself. A great many *Letters of Intercommuning*¹ were now issued against the Covenanters. By this severe and absurd proceeding, crimes and punishments went on multiplying in a geometrical progression; and, lest the cry of an oppressed people should reach the throne, the council prohibited, under severe penalties, all noblemen and gentlemen of landed property from leaving the kingdom.

The course of these violent proceedings was distinguished by an event which, in all its circumstances, is eminently characteristic of the men who bore rule at this period. We allude to the trial and execution of James Mitchell for an attempt to assassinate the Archbishop of St Andrews ten years before. One evening in July 1668, as Sharpe was sitting in his coach at the head of Blackfriar's Wynd, waiting for the Bishop of Orkney, and while the latter was in the act of stepping into it, Mitchell, then a Presbyterian preacher, discharged a pistol at the dignified apostate; but the Bishop of Orkney, happening at the instant to extend his arm, intercepted the shot, and was severely wounded in consequence. This occurred in the principal street of the city; yet so generally was the archbishop hated, that the assassin was allowed to walk off without interruption; and, having turned down a street or two, he threw aside a partial disguise he had worn, re-appeared in public, and remained altogether unsuspected. Six years after this, Sharpe happening one day to notice a man who seemed to observe him narrowly, and dreading lest another attempt at assassination should be made, caused him to be arrested and examined. Two loaded pistols were found upon his person; and, as he was now concluded to have been the author of the former attempt, Sharpe promised, that if he would confess his guilt, he should be dismissed without any punishment. Mitchell (for it was he), was credulous enough to believe the archbishop, and was immediately produced before the council by the faithless primate. But this righteous conclave having no proof against him, and hoping to implicate in his crime the whole body of the Covenanters, solemnly renewed the promise of pardon, upon condition that he would make a full disclosure. Mitchell accepted the terms offered him; but when the council found, by this man's confession, that only one person, then dead, had been privy to his design, their rage and disappointment knew no bounds. He was immediately carried before the Court of Justiciary, and required to adhere to his confession, with certification that if he did not comply, he would forfeit the benefit of the assurance which had been given him. Mitchell now saw with whom he had to deal. On being judicially interrogated, he refused to confess, and was, in consequence, put to the torture, which he endured with singular fortitude; obstinately persisting in his refusal to criminate himself, till he fainted through excessive agony. As the boots (the instrument of torture) had failed to extort a confession, he was sent to the Bass, then used as a state prison for the persecuted Covenanters, and remained there loaded with irons, in the greatest misery, till the end of the year 1678, the period at which we have arrived. Infuriated at the failure of all their coercive measures, and resolved, by some new examples, to strike terror into the breasts of the

¹ Letters of Intercommuning, which bore an analogy to the *Aqua et Ignis Interdictio* of the Roman law, concluded thus: "We command and charge all our lieges and subjects, that none presume to reset, supply, or intercommune with any of the foresaid our rebels, nor furnish them with meat, drink, house, harbour, or victuals, nor any other thing useful or conformable to them; nor have any intelligence with them by word, writing, message, or otherwise, under pain of being repute and esteemed art and part with them in the crime foresaid, and to be pursued therefore with all rigour." (Laing, iv. 77, 78, 2d ed.; Wodrow, i. 392, 416-418; Burnet, ii. 156-183.)

Rem of Covenanters, the council once more produced him; and he was now indicted at the instance of Sir George Mackenzie, his majesty's advocate, upon 4 act of 16 Parl. of James VI., by which the invading of privy counsellors is made death. No proof of his guilt could be adduced except his former confession, which he judicially denied. But it was proved against him by the testimony of Lauderdale the commissioner, Rothes the chancellor, Maitland the lord-treasurer depute, and the archbishop of St Andrews, all of whom,—when it was alleged in behalf of the accused, that any confession he had emitted was upon promise of life *et spe venia*,—expressly swore, that no assurance of life had been given him, *although the records of the privy council remain to this hour the incontestible monument of their perjury!* The prisoner then produced a copy of the act of council which contained the assurance of his life, and moved that the original might be exhibited. This, however, was refused, on the pretence that the fact was already sufficiently established by the parole testimony of privy counsellors; and the unhappy man was accordingly condemned and executed.¹

When Lauderdale, who probably felt some remorse on account of the iniquitous means which had been used to obtain his conviction, wished to commute Mitchell's sentence, the unrelenting primate interposed, and insisted upon its execution, as the only way of securing his own life against a repetition of similar attempts in future. But he calculates ill who seeks protection by means of perjury, injustice, and cruelty. Some acts of local oppression, added to the hatred which was so generally entertained for him, brought down upon the primate the very fate which he thus sought to avoid. On the 3d of May 1679, he was waylaid and murdered in Magus Muir, near St Andrews, by a troop of fanatics, who had been driven to madness by his tyranny, and who, in perpetrating this unholy deed, were actuated solely by their own enthusiasm or revenge. But the act committed by these men was nevertheless imputed to the party to which they ostensibly belonged; and the consequence was, that all who attended field conventicles were ordered to be indiscriminately massacred. This brought matters to a crisis.

The Covenanters, finding themselves obliged to meet in large bodies, and bring arms for their own security, drew up a declaration against prelacy, which they published at Rutherglen, a small burgh near Glasgow; and in the market-place they burned the several acts of parliament which had established that mode of ecclesiastical government, and had prohibited all conventicles. For this purpose they chose the 20th of May, the anniversary of the Restoration, having previously extinguished the bonfires which had been kindled on that occasion. Graham of Claver-

house, afterwards Viscount Dundee, an active and merciless agent of the council, attacked a great conventicle upon Loudon Hill, but was repulsed with the loss of thirty men. The Covenanters, finding themselves thus unwarily engaged in rebellion, were obliged to persevere, and therefore pushed on to Glasgow, which, though repulsed at first, they afterwards made themselves masters of. Here they dispossessed the established clergy, and issued proclamations, in which they declared that they fought against the king's supremacy, against popery and prelacy, and against a popish successor to the crown.

Alarmed at this rising, Charles dispatched against the Covenanters a small body of English cavalry under the Duke of Monmouth, who, having joined the Scottish guards, and some regiments of militia levied from the well-affected counties, marched with great celerity in quest of the insurgents. They had taken post at Bothwell Bridge, between Hamilton and Glasgow; a good position, to which there was no access but by the bridge, which a small body might have defended against the king's army. The whole force of the Covenanters never exceeded 8000 men, and they had in reality no other generals than their clergymen. Monmouth attacked the bridge, and a party of the Covenanters stoutly maintained their post as long as their ammunition lasted. When they sent for a fresh supply, they received orders to quit their post and retire; and this imprudent measure occasioned an immediate defeat. Monmouth passed the bridge without opposition, and, drawing up his forces opposite to the enemy, soon put them to the rout, which, indeed, was effected by his cannon alone. About seven hundred were killed in the pursuit, for, properly speaking, there was no action. Twelve hundred were taken prisoners, and treated with humanity by Monmouth. Such as promised to live peaceably under the present government were dismissed; and about three hundred who refused this condition were shipped for Barbadoes, but unfortunately perished during the voyage. Two of their clergymen, however, were hanged. Soon afterwards an act of indemnity was passed; but Lauderdale took care that it should afford little protection to the unhappy Covenanters; for, although orders were given thenceforward to connive at all conventicles, he found means, under a variety of pretences, to elude the execution of them.

That Charles had formed a scheme for overturning the established religion, and substituting popery in its place, as well as for rendering himself absolute, is now certainly known. But in this he met with strenuous opposition from his parliaments; and as the present one seemed to surpass its predecessors in resisting the schemes of the court, the king was induced to dissolve them and to call another in 1680. By this step, however, he gained no-

¹ Sir George Mackenzie, at whose instance Mitchell, as we have seen, was prosecuted and capitally convicted, asserts, in his *History*, page 327, that when this unfortunate man was brought before the council, "he fell upon his knees and confessed the whole matter, without asking either life or promise of any favour;" which confession he also signed. This is abominable equivocation. Even supposing that Mitchell did not "ask either life or promise of any favour," if the council ultroneously gave him an assurance of pardon, was the obligation less binding on that account? But it appears from the face of the record, which still remains to impeach the Lord Advocate's veracity, that Sir George Mackenzie assisted at the council when Mitchell confessed and obtained assurance of his life; and, as if this had not been sufficient to overturn the statements of the public prosecutor, he himself, two sentences farther on, says that Mitchell, "being persuaded that extrajudicial confession was not binding, resiled; whereupon the council declared, that he had forfeited any promise that was made to him!" The same learned person affirms, that the act of council was "justly refused," because, "being posterior to the confession, it could not prove that the confession was upon promise of life; and that act designed to annul the confession, and so could not be made use of for astructing it." The act of council however states, in the most explicit terms, that "the confession was emitted upon promise of life," which implies that the "promise" was anterior to the "confession;" and as to the legal sophism, that the "act designed to annul the confession, and so could not be made use of for astructing it," to the extent of proving the "promise of life," it is sufficient to observe, that the act of council was legally probative of what had occurred there, and that if it was held competent to prove the "confession," it must have been equally so to establish the "promise" on which it was emitted. No one can doubt, therefore, that the production of the act was "refused," because it would have clearly instructed the "promise that was made" to Mitchell, and because four privy counsellors had, in order to effect this man's destruction, resolved to perjure themselves by swearing, in the face of the record of their own proceedings, that no assurance of life had been given him. Mackenzie adds, that the pannel's counsel, Sir George Lockhart, "refused to speak for him, being unwilling to offend Lauderdale." (*History, ubi supra.*)

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thing; for they voted the legality of petitioning the king, and fell with extreme severity on the Abhorers, who, in their addresses to the crown, had expressed their disapprobation of such petitions. Great numbers of this class were seized by their order in all parts of England, and committed to close custody; and the liberty of the subject, which had been so carefully guarded by their own recent law, was violated by such arbitrary and capricious imprisonments. But one Stowel of Exeter put a stop to these proceedings. He refused to obey the serjeant at arms who had been sent to apprehend him; and, standing upon his defence, declared that he knew of no law by which the House of Commons could pretend to commit him. The house, finding it equally dangerous to proceed or recede, got off by an evasion. They voted that Stowel was indisposed; and a month was allowed him for his recovery, about which, as may well be supposed, they gave themselves no further concern.

But the chief point laboured by the present parliament was the exclusion bill, which, though voted by a former house, had never yet made any further progress. In the present House of Commons it passed by a great majority, but was thrown out by the House of Peers. All the bishops except three voted against it; being of opinion that the church of England was in greater danger from the prevalence of Presbyterianism than from the introduction of popery. The Commons were extremely mortified at the rejection of their favourite bill, and in retaliation they passed several other disagreeable acts. Amongst these was one which set forth, that, till the exclusion bill was passed, they could not, consistently with the trust reposed in them, grant the king any manner of supply; and that whoever should hereafter lend, by way of advance, any money upon the branches of the king's revenue, should be responsible to parliament for his conduct. Finding that there were no hopes of extorting either money or compliance from the Commons, Charles came to a resolution of once more dissolving the parliament; and this accordingly took place while they were voting that the dissenters ought to be encouraged, and that the city of London had been burned by the papists.

It was for some time doubtful whether the king would ever call another parliament. But his necessities surmounted all his fears, and in 1681 he summoned a parliament to meet at Oxford, that he might thus have an opportunity of punishing the city of London, by showing his suspicions of their loyalty. In this, however, as in all former parliaments, the country party predominated; and they trode exactly in the footsteps of their predecessors. The same Speaker was chosen, and the exclusion bill urged more fiercely than before. Ernely, one of the king's ministers, went so far as to propose that the duke should be banished five hundred miles from England, and that on the king's decease the next heir should be appointed regent. Yet even this expedient, which left the duke only the barren title of king, failed to obtain the approbation of the house; nothing but a total exclusion could satisfy them.

The opposite factions had for some time indulged their animosities by reviling and ridiculing each other in pamphlets and libels; but this practice, too common in party warfare to deserve particular mention, was at length attended with an incident which deserves notice. One Fitzharris, an Irish adventurer, employed a Scotsman named Everard, who, like himself, hung loose on society, to write a libel against the king and the Duke of York. The Scot, who was actually a spy for the opposite party, supposing this a trick to entrap him, discovered the whole to Sir William Waller, a justice of the peace; and, to convince the magistrate of the truth of his information, secreted him and two other persons in a place where they overheard the whole con-

ference between Fitzharris and himself. The libel concocted betwixt them was replete with the utmost rancour and scurrility. Waller carried the intelligence to the king, and obtained a warrant for committing Fitzharris, who at the time happened to have a copy of the libel in his pocket. Finding himself in the hands of a party from which he could expect no mercy, Fitzharris resolved to change his game, and to throw the odium of the libel upon the court, who, he said, had employed him to draw it up with the view of imputing it to the exclusionists, and thus rendering them hateful to the people. And, in order to enhance his services in the estimation of the country party, he revealed to them a new popish plot, still more tremendous than any of those previously hatched, and accused the Duke of York as a principal accomplice in the conspiracy. The king, however, imprisoned Fitzharris in Newgate. But the Commons immediately espoused his cause, and voted that he should be impeached by themselves, in order to screen him from the ordinary forms of justice. The Lords rejected the impeachment; the Commons asserted their right; and a commotion was likely to ensue, when the king, in order to break off the contest, went to the house and dissolved the parliament, with a fixed resolution never to call another.

From this moment the king ruled with despotic sway. His temper, which had generally been easy and merciful, now became arbitrary and cruel; he entertained spies and informers round the throne, and imprisoned all those whom he thought most daring in their designs. In particular, he resolved to humble the Presbyterians. They were divested of all their employments, and their offices given to such as were favourable to the court, and approved the doctrine of non-resistance. The clergy began to testify their zeal and their principles by their writings and sermons; but although the partizans of the king were the most numerous, those of the opposite faction were the most enterprising. The king openly espoused the cause of the former; and thus placing himself at the head of a faction, he deprived the city of London, which had long headed the popular party, of their charter. Terror was also employed to confirm this new species of monarchy. Fitzharris was brought to trial, condemned, and executed. The whole gang of spies, witnesses, informers, and suborners, who had long been encouraged and supported by the leading patriots, finding now that the king was entirely master, turned short upon their ancient employers, and tendered evidence against those who had first put them in motion. The king's ministers gave encouragement to these miscreants; and in a short time the same injustice and the same cruelties were practised under pretence of Presbyterian, as had formerly been committed under the delusive apprehension of Catholic treasons. But the king's chief resentment was levelled against the Earl of Shaftesbury; and not without reason, as he had been very active in the late disturbances. No sums were spared to seek for evidence, nor even to suborn witnesses, against this intriguing and formidable man. A bill of indictment was presented to the grand jury, and witnesses were examined, who swore to such incredible circumstances as must have invalidated their testimony, even if they had not been branded as perjured villains. Amongst his papers, indeed, was found a draught of an association, which might have been construed into treason; but it was not in the earl's handwriting, nor could it be proved that he had ever communicated this scheme to any body, or signified his approbation of any such project. But the sheriffs had taken care to summon a jury whose principles coincided with those of the earl; and in that, more than in any insufficiency of proof, consisted his safety. The bill was ignored by the grand jury; the hall resounded with ap-

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 Reli of plause; and the day was closed with the ringing of bells, the burning of bonfires, and other demonstrations of popular joy.

But it was in Scotland that the character of the restored government appeared in its most hideous features. The duke, after a temporary exile from Britain, had been sent to that country; and there, during his administration, he exercised a tyranny, if possible still more frightful than that of Lauderdale. The battle of Bothwell Bridge had tamed the spirit of the Covenanters, and many of them, by frequenting the churches of the indulged ministers, succeeded in screening themselves from the vengeance of the government. But there was still left a remnant of faithful adherents of the covenant, inconsiderable in number, and despicable in point of influence, but men of stern character, exalted enthusiasm, and indomitable zeal, who followed their spiritual guides, Cargill and Cameron, into the wilderness, and, amidst the glens and morasses, were fed by them with the manna of the divine word. Hunted like partridges on the mountains, and subjected to military execution wherever they were caught, these men, naturally led to inquire into the authority of those by whom their sufferings were inflicted, came as naturally to the conclusion, that the king having broken the condition upon which he received the crown of Scotland, by rejecting the covenant, had therefore forfeited all right to the exercise of the regal authority. Deeply convinced of the truth of this doctrine, Cameron, accompanied by twenty persons of his sect, proceeded to Sanquhar, and there published "A Declaration and Testimonie of the true Presbyterian, Anti-Prelatic, Anti-Erastian, and persecuted Party in Scotland," setting forth their grievances, disowning the king by reason of his tyranny, proclaiming war against him as a tyrant and usurper, and testifying against the reception of the Duke of York, a professed Papist, in Scotland, as repugnant to their principles, and their vows to the most high God. This persecuted remnant, who mustered in all twenty-six horse and forty foot, now prepared to support their bold defiance by force of arms; but they were surprised, defeated, and dispersed, by three troops of dragoons, at Airmoss, in the district of Kyle. Cameron fell in the skirmish, fighting with heroic courage; his brother, with seven of his companions, shared his fate; Hackston of Rathillet, who had been a passive spectator merely of the murder of Sharpe, and a few others, were wounded and made prisoners. Cargill escaped from the field, and prepared to avenge the death of his friends. Having repaired to Torwood in Stirlingshire, and assembled a number of his disciples, henceforward known by the name of Cameronians, he proceeded, after a lecture and sermon, to excommunicate the king, "for his mocking of God, his perjury, his uncleanness of adultery, his drunkenness, and his dissembling with God and man;" the Duke of York, for idolatry; the Duke of Monmouth, for invading God's people at Bothwell Bridge; the Duke of Lauderdale, for blasphemy, apostacy, and adultery; and the Duke of Rothes, Sir George Mackenzie, and Dalziel of Binns, for different offences. He concluded by declaring that "no power on earth, of kings, princes, magistrates, or ministers, of the gospel, could, without the repentance of the persons openly and legally appearing, reverse this excommunication;" and there can be no doubt whatever that his affirmation was most devoutly believed.

These proceedings exasperated the council beyond all measure, and hurried them into the commission of unparalleled atrocities. The prisoners brought from Airmoss were executed with every circumstance of barbarity; a strict search was made, not only after their associates, but also for the professors of their doctrines; and of the latter, many, including females, testified with the loss of their

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 lives the sincerity of their belief. Even those innocent of all offence towards the government were insidiously involved in the same fate with those who had openly defied it. Taking advantage of the spirit which the cruelties of the government had alone excited and inflamed, the privy council sought to entrap fresh victims by means of ensnaring questions, thus imitating the great master they served, in tempting men to sin, that they might have the pleasure of punishing them for it. Was Archbishop Sharpe's death murder? Was the rising at Bothwell Bridge rebellion? Is Charles a rightful king or a tyrant? Such were the interrogatories put to the victims of rage and suspicion, who being for the most part too sincere to dissemble their opinions, and too fearless to be intimidated even by the most cruel tortures, were commonly dismissed from the iron boot to the court of justiciary, and thence, by a rapid transition, to the scaffold.

But the mass of the people were not the only objects of this fierce and frantic tyranny. Anon it took a higher flight, and struck at the Earl of Argyll, a man whose only fault appears to have consisted in his submission to the frightful misrule under which his country had so long groaned; a submission dictated by a love of peace, not by an approval of its enormities. When required, as a privy counsellor, to take a self-contradictory test, which the Scottish parliament had prescribed, Argyll accepted it with an explanation, that he took it in as far as it was consistent with itself and the Protestant religion, adding, that he would "not debar himself from endeavouring in a lawful way, and in his station, to make such changes in the church and state as he might judge beneficial." For this explanation he was imprisoned in the castle of Edinburgh, brought to trial, and, by an infamous perversion of his words, a charge of treason made out against him. Nairne, a superannuated judge, carried into court at midnight to make a majority on the relevancy of the indictment, fell asleep during the proceedings, and was only awakened to give his vote. A jury of Argyll's personal enemies, with the Marquis of Montrose at their head, found him guilty of treason, leasing-making, and leasing-telling, though not of the perjury libelled; and he received sentence of death, although the execution of it was suspended during the king's pleasure. But Argyll did not choose to trust to the tender mercies of his enemies. He escaped from the castle in disguise, and thus saved his life; but sentence of attainder was passed against him. After the defeat of the exclusionists, and the dissolution of parliament, the duke was recalled to England; but the consequent change of administration was productive of little or no relief to this oppressed country.

In 1683 the city of London was deprived of its charter, which was only restored upon terms of abject submission, and its giving up the nomination of its own magistrates. This was so arbitrary a proceeding, that all the other corporations in England began to dread the same treatment, and, in fact, were successively induced to surrender their charters into the hands of the king. Considerable sums were exacted for the restoration of these charters, and all the offices of power and profit were left at the disposal of the crown. Resistance now, however justifiable, was no longer safe; and prudent men saw no other expedient but submitting with patience to the present grievances.

There was a party in England, however, which still cherished their former ideas of freedom, and resolved to restore liberty to their country by dethroning the monarch who acted in a manner so despotic and arbitrary. The principal members of this confederacy were Monmouth, Shaftesbury, Russell, Essex, Howard, Algernon Sidney, and John Hampden, grandson to the great man

Reign of Charles II. of that name. Monmouth engaged the Earl of Macclesfield, Lord Brandon, Sir Gilbert Gerard, and other gentlemen in Cheshire; Lord Russell entered into a correspondence with Sir William Courtney, Sir Francis Knowles, and Sir Francis Drake, who promised to raise the west; and Shaftesbury, with one Ferguson, a restless plotter, undertook to manage the city, upon the aid of which the confederates chiefly relied. These schemes had been laid in 1681. But the caution of Lord Russell, who induced the Duke of Monmouth to postpone the enterprise, saved the kingdom from the horrors of a civil war; whilst Shaftesbury was so struck with a sense of his impending danger, that he left his house, and lurking about the city, attempted in vain to force the Londoners into open insurrection. Enraged at the numberless cautions and delays which clogged and defeated his projects, he at last threatened to begin with his own friends singly; but after a long struggle between fear and exasperation, he abandoned all hopes of success, and fled to Amsterdam, where he soon afterwards died. But the loss of Shaftesbury, though it retarded, did not put an end to the designs of the patriots. The remaining six formed a council, corresponded with Argyll and the malcontents in Scotland, and, though they widely differed in principles from one another, resolved to prosecute the scheme of the insurrection. Monmouth aspired to the crown; Russell and Hampden proposed to exclude the Duke of York from the succession, and to redress the grievances of the nation; Sidney was for restoring the republic; and Essex shared the same wishes and opinions. Lord Howard was an abandoned man, who, having no fixed principles of any kind, sought to embroil the nation, in hopes of advancing his own private interest during the confusion.

Besides these there was a subordinate set of conspirators, who frequently met together, and carried on projects quite unknown to Monmouth and his council. Among them was Colonel Rumsey, a military adventurer; Lieutenant-Colonel Walcot, a man of the same stamp; Good-enough, under-sheriff of London, a zealous and noted party-man; Ferguson, an independent minister; and several attorneys, merchants, and tradesmen of London. But Rumsey and Ferguson were the only persons who had access to the great leaders of the conspiracy. These men took the resolution of assassinating the king in his way to Newmarket; and as Rumboldt, one of the party, possessed a farm upon the road called the *Rye-house*, the conspiracy was thence called the *Rye-house Plot*. The scheme they had fixed on was to stop the king's coach by overturning a cart on the highway at this place, and to shoot him through the hedges. But the house in which the king lived at Newmarket having accidentally taken fire, he was obliged to leave that place eight days sooner than was expected, and to this circumstance he owed his safety. Soon afterwards the conspiracy was discovered; Russell, Sidney, and Walcot, were executed; Essex cut his own throat; Hampden was fined forty thousand pounds; and scarcely one escaped who had been in any manner concerned, except the Duke of Monmouth, who was the most culpable of all.

This was the last blood shed on account of plots or conspiracies, which had abounded during the greater part of this reign. Severe punishments, however, were inflicted on many who had treated the Duke of York unworthily. The infamous Titus Oates was fined a hundred thousand pounds for calling him a popish traitor, and was imprisoned till he paid the mulct, which he was absolutely incapable of doing. A similar sentence was passed upon Dutton Colt; and Sir Samuel Barnadiston was fined ten thousand pounds for having in some private letters reflected on the government. The government of Charles

was now as absolute as that of any prince in Europe; but Reigned to please his subjects by a popular act, he judged it proper to marry the Lady Anne, his niece, to Prince George, brother to the king of Denmark; which was the last transaction of this extraordinary reign.

On the second of February 1685, about eight in the morning, the king was seized with a fit of apoplexy, as he came dressed out of his closet, where he had been for some time after he rose from bed. Being immediately bled, he was restored to his senses, and hopes were entertained of his recovery. But on the fourth day the physicians despaired of his life, and therefore sent for the queen. He was in his perfect senses, when she arrived. She threw herself on her knees, and asked his pardon for all her offences. He replied that she had offended in nothing, but that he had been guilty of offences against her, and asked her pardon. He spoke with great affection to the Duke of York, and gave him excellent counsel for his future conduct, advising him to adhere to the laws with strictness, and invariably to support the church of England. But the duke seemed anxious to convince his brother before he died how little he intended to follow his advice. Having removed the bishops, and several of the lords who attended at the bedside of the king, he sent for Huddleston, a Catholic priest, who, in the presence of the duke, the Earl of Bath, and Trevannion, a captain in the guards, gave extreme unction to the king, and administered to him the sacrament according to the rites of the church of Rome. All this was done in about the space of half an hour. The doors were then thrown open; and six prelates, who had before attended the king, were sent for to give him the sacrament. Kenn, bishop of Bath and Wells, read the visitation of the sick, and, after the dying man had said that he repented of his sins, the absolution. The king assisted with seeming devotion at the service; but his mouth being distorted with fits, and his throat contracted, he could not swallow the elements. He professed, however, his satisfaction with the church of England, and expired on the 6th of February, after a reign of twenty-four years, and in the fifty-fifth year of his age.

In person Charles was tall and well-proportioned, with a swarthy complexion and features austere and forbidding. His constitution, originally sound and robust, he had in his youth impaired by indulgence, and afterwards laboured to restore by attention to diet and exercise. In disposition he was kind, familiar, communicative; delighting in social converse; averse to parade and ceremony; and eager, on all occasions, to escape from the trammels of official dignity to the ease and comfort of colloquial familiarity. He had good talents; but these were joined to an insuperable antipathy to application, which disqualified him for business, and kept him in a state of ignorance disgraceful to one in his station. He sought amusement alone, and seems to have cared little for any thing beyond the gratification of this propensity. He looked upon the practice of dissimulation as the grand secret in the art of reigning. Surrounded by men who made it their object, as it was their interest, to deceive him, his only protection, he argued, consisted in the employment of the same weapon, and it was necessary for him to deceive, that he might not be deceived. During his whole reign he was the slave of women; and his court became a school of vice, in which all the restraints of morality and even decency were laughed to scorn; whilst the distinctions he lavished on his mistresses enabled them to put a bold front on their infamy, and, holding out an encouragement to crime, tended to sap in youthful breasts those principles of modesty which are the best guardians of female virtue. "There may have been other periods of our history in which immorality prevailed,"

Reign of James II. says Dr Lingard; "but none in which it was practised with more ostentation, or brought with it less disgrace." Of Charles's pecuniary transactions with France it is impossible to think without feelings of shame, or to speak except in the language of reprobation. They were equally disgraceful in themselves, and humiliating to the nation, which had at its head a king who thus sold himself to its natural rival and enemy. That he cherished designs subversive of the liberties of the subject, is evinced by the whole tenor of his conduct, especially during the latter part of his reign; and had he been as active in his habits as he was unprincipled in his character and despotical in his disposition, the constitution might have been overthrown, and a monarchy as absolute as any in Europe erected on its ruins. With respect to what he was pleased to call his religion, he appears to have been a deist; and although he had embraced the Catholic worship before the restoration, yet he was not formally reconciled to the church of Rome until the eve of his death. By this means he was enabled to play the hypocrite, and, for five-and-twenty years, to hold himself out as an orthodox protestant, whilst he satisfied his conscience by secretly professing Catholicism, and in reality believed no religion at all. Finally, in all the relations of life, whether public or private, he was equally unprincipled, profligate, false, immoral, vicious, and corrupt; whilst, from the example of his debauched and licentious court, public morals contracted a taint, which it required little less than a century to obliterate, and which for a time wholly paralysed the character of the nation.

CHAP. VII.

REIGN OF JAMES II.

Accession of James II.—Slavish Addresses.—Remarkable one by the Quakers.—Imprudent Measures of the King.—Measure in favour of the Catholics.—Monmouth's Conspiracy.—Defeat and Execution of Argyll.—Landing of Monmouth.—Battle of Sedgemoor.—Defeat, Capture, and Execution of Monmouth.—James endeavours to establish Popery.—Parliament dissolved.—Catholics promoted.—Opposition of the English Clergy.—An ambassador sent to Rome.—Declarations in favour of liberty of conscience.—The seven Bishops imprisoned.—Popular commotions.—Trial and acquittal of the Bishops.—Attachment of the army to the Protestant Cause.—Birth of the Prince of Wales.—Treachery of Sunderland.—Proceedings of the Prince of Orange.—Invited to England by the malcontents.—James warned of his danger by the French king.—Rejects all offers of assistance.—Paralysed by the news of the intended invasion.—Perfidy of Sunderland.—Vain attempts at conciliation.—Landing of William Prince of Orange.—Defection of James's army.—Distressing situation of the King, who is deserted even by his own children.—Conduct of William.—James attempts to quit the kingdom, but is seized and detained.—His distress.—Return to London.—Ordered to leave the palace.—Urged to remain by some of his adherents.—His refusal.—Lands in France.—The throne declared vacant.—William raised to the Sovereignty in conjunction with the Princess Mary his wife.

The first act of James II.'s reign was to assemble the privy council, in which, after bestowing some praise on the memory of his predecessor, he made professions of his resolution to maintain the established government both in church and state; and as he had heretofore ventured his life in defence of the nation, he declared that he would still go as far as any man in maintaining all its just rights and privileges.

This discourse was received with great applause, not only by the council, but by the whole nation. Addresses came from all quarters, full of duty, nay, of the most servile adulation. From this charge, however, must be excepted that of the Quakers, which is remarkable for its

good sense and simplicity. "We are come," said they, "to testify our sorrow for the death of our good friend Charles, and our joy for thy being made our governor. We are told that thou art not of the persuasion of the church of England, no more than we; wherefore we hope that thou wilt grant us the same liberty which thou allowest thyself, which doing, we wish thee all manner of happiness."

The king, however, soon showed, either that he was not sincere in his promises, or that he entertained so lofty an idea of his own regal power, that even his utmost sincerity could tend but little to the security of the liberties of the people. All the customs, and the greater part of the excise, which had been voted to the late king for his life only, were levied by James without any new act for that purpose. He went openly to mass with all the ensigns of his dignity, and even sent one Caryl as his agent to Rome to make submissions to the pope, and to pave the way for the re-admission of England into the bosom of the Catholic church. By the suggestions of these men all his measures were undertaken. One day when the Spanish ambassador ventured to advise his majesty against putting too much confidence in such kind of people, "Is it not the custom in Spain," said James, "for the king to consult with his confessor?" "Yes," answered the ambassador, "and that is the reason why our affairs succeed so very ill."

James's first parliament, which was composed mostly of zealous Tories, was strongly inclined to comply with the measures of the crown, and passed a unanimous vote, settling on James during life all the revenue enjoyed by the late king till the time of his decease. For this favour James assured them that he would secure them in the full enjoyment of their laws: but with regard to religion no answer could be extorted from him, for that he was resolved at all hazards to change. In every thing except religion, however, James merited commendation. He applied himself to business with unremitting attention; he managed his revenue with the strictest economy; he retrenched superfluous expenses, and showed himself zealous for the glory of the nation; he endeavoured to expel from court the vice which had prevailed so much during the former reign, and to restore decency and morality; he presided daily at the council, and at the boards of admiralty and treasury; he even entered into the whole detail of the concerns of the great departments of the state. But his bigoted attachment to the Roman Catholic religion sullied all his good qualities, and rendered him feared for his violence, where he was not despised for his weakness.

But whilst every thing remained in tranquillity at home, a storm was gathering abroad. For a long time the Prince of Orange had entertained hopes of ascending the British throne, and had even used endeavours to exclude James. Monmouth, who, since his last conspiracy, had been pardoned, but ordered to depart the kingdom, had retired to Holland, where he was received by the Prince of Orange with the highest marks of distinction, and became his chief favourite. When the news of Charles's death arrived, indeed, the prince made a show of changing his tone, and dismissed Monmouth, but still kept up a close correspondence with him. The duke retired to Brussels; and, having resolved to invade England, he was seconded by the Earl of Argyll, who formed the scheme of exciting an insurrection in Scotland. But the generosity of the Prince of Orange did not correspond with the warmth of his professions. The unfortunate duke derived from his own plate and jewels his whole supply for the war; whilst the enthusiasm of a rich widow supplied Argyll with ten thousand pounds, with which he purchased three vessels, and loaded them with arms and ammunition.

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Having landed in Scotland, Argyll published his manifestoes, put himself at the head of two thousand five hundred men, and strove to influence the people in his favour. But a formidable body of the king's forces having marched against him, his army fell away; and he himself, after being wounded in attempting to escape, was taken prisoner by a peasant, carried to Edinburgh, and, after suffering many indignities, publicly executed.

By this time Monmouth had landed in Dorsetshire with scarcely a hundred followers. His name, however, was so popular, and so great was the hatred of the people to James on account of his religion, that in four days he had assembled a body of above two thousand men, and continuing to make a rapid progress, in a short time found himself at the head of six thousand men; but he was daily obliged to dismiss great numbers for want of arms. Alarmed at his invasion, the king recalled six regiments of British troops from Holland; and a body of regulars, to the number of three thousand, was sent, under the command of the Earl of Feversham, and of Lord Churchill, to check the progress of the rebels. They took post at Sedgemoor, a village in the neighbourhood of Bridgewater, and were joined by considerable numbers of the country militia. Here Monmouth resolved to make a stand; and having drawn up his followers in the best order he could, he drove the royal infantry from their ground, and was on the point of gaining a complete victory, when the cowardice of Gray, who commanded the horse, ruined all. This nobleman fled at the first onset; and the insurgents being charged in flank, gave way after a contest of three hours. About three hundred were killed in the engagement, and a thousand in the pursuit. Monmouth fled above twenty miles from the field of battle, till his horse sunk under him. He then alighted, and, exchanging clothes with a shepherd, fled on foot, attended by a German count who had accompanied him from Holland. Being at length quite exhausted with hunger and fatigue, they both lay down in a field, and covered themselves with fern. Meanwhile the shepherd being found in Monmouth's dress, increased the diligence of the search; and by means of bloodhounds he was detected in his miserable situation, with raw peas in his pocket, on which he had subsisted for some days. He burst into tears when seized by his enemies, and petitioned, with abject importunity, for his life.

He also wrote to the queen dowager; he sent a letter to the reigning queen, as well as to the king himself; and he begged his life, when admitted into the presence of James, with a meanness unsuitable to his pretensions and high rank. But all his entreaties and submissions were of no avail. James told him that he was much affected at his misfortunes, but that his crime was too dangerous in its example to be left unpunished. In his last moments Monmouth behaved with a magnanimity worthy of his former courage. When he came to the scaffold, he conducted himself with decency and even with dignity. He spoke little, he made no confession, nor did he accuse any of his friends. The circumstances attending his death excited horror among the spectators. The executioner missed his aim, and struck him slightly on the shoulder. Monmouth raised his head from the block, and looked him full in the face, as if reproaching him for his mistake. The man struck twice again, but feebly, and then threw away the axe. The sheriff forced him to renew his attempt; and the head of the duke, who seemed already dead, was at last severed from his body.

Those concerned in the Duke of Monmouth's conspiracy were punished with the utmost severity. Immediately after the battle of Sedgemoor, Feversham hanged up above twenty prisoners, and was proceeding with his executions

when the Bishop of Bath and Wells informed him that these unhappy men were now by law entitled to a trial, James II. and that their execution would be deemed murder. Nineteen were put to death in the same manner at Bridgewater by Colonel Kirke, a man of a thoroughly savage and bloody disposition. This miscreant, practised in the arts of slaughter at Tangiers, where he had served in garrison, took pleasure in committing acts of wanton barbarity, and ravaged the whole country without making any distinction between friend and foe; his own regiment being designated, by way of eminence, "Kirke's Lambs." The natural brutality of this man's temper was inflamed by continual intoxication. No fewer than eighty were executed by his orders at Dorchester; and on the whole, at Exeter, Taunton, and Wells, two hundred and fifty are computed to have fallen by the hand of justice, as it was called, under the auspices of Judge Jefferies, who had been sent down to try the delinquents. This man, not satisfied with the sacrifice of the principals, charged the juries to search out the aiders and abettors of the rebellion; and those persons who, in compassion for the wretched fugitives, had afforded them an asylum, were denounced and punished as such. Even women did not escape, and two, Lady Lisle and Mrs Gaunt, were sentenced to be burned alive for similar acts of humanity. Jefferies, on his return from his campaign in the west, was immediately created a peer, and soon after invested with the dignity of chancellor. In his Memoirs James complains, with apparent indignation, of "the strange havoc made by Jefferies and Kirke in the west," and attributes the unpopularity which afterwards deprived him of the crown to the violence and barbarity of those pretended friends of his authority.

James now began to throw off the mask, and to endeavour openly to establish popery and arbitrary power. He told the House of Commons that the militia were found by experience to be of no use; that it was necessary to augment the standing army; and that he had employed a great many Catholic officers, in whose favour he had thought proper to dispense with the test required to be taken by all who were employed by the crown. These stretches of power naturally led the Lords and Commons into some degree of opposition; but they soon acquiesced in the king's measures, and then the parliament was dismissed for their tardy compliance.

The parliament being dissolved, James's next step was to secure a Catholic interest in the privy council. Accordingly four Catholic lords, Powis, Arundel, Bellasis, and Dover, were admitted as members. Sunderland, who saw that the only way to gain preferment was by popery, became a convert. Rochester, the treasurer, was turned out of his office because he refused to conform. Even in Ireland, where the Duke of Ormond had long supported the royal cause, this nobleman was displaced as being a Protestant, and the Lord Tyrconnel, a furious Catholic, was placed in his stead. In his zeal for popery, it is said that James stooped so low as even to attempt the conversion of Colonel Kirke; but the daring soldier told him that he was pre-engaged, for he had promised the king of Morocco, when he was quartered at Tangiers, that if ever he changed his religion he would turn Mahomedan. At last the clergy of the church of England began to take the alarm, and commenced an opposition to court measures. The pulpits now thundered out against popery; and it was in vain that James attempted to impose silence on this topic. Instead of avoiding the controversy, the Protestant preachers pursued it with greater warmth.

To effect his designs, the king determined to revive the High Commission Court, which had formerly given the nation so much disgust, and which had been abolished for ever by act of parliament. An ecclesiastical commission was

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Reign of James II. accordingly issued; by which seven commissioners were invested with full and unlimited authority over the whole church of England. The next step was to allow liberty of conscience to all sectaries. This was done in the belief that the truth of the Catholic religion would, upon a fair trial, gain the victory. Besides, the same power that granted liberty of conscience might restrain it; and the Catholic religion alone would thus predominate. He therefore issued a general indulgence, declaring that non-conformity to the established religion was no longer penal; but in Scotland he ordered his parliament to grant a toleration only to the Catholics, without interceding in the least for the other dissenters. In Ireland the Protestants were totally expelled from all offices of trust and profit, and Catholics put in their places. These measures sufficiently disgusted every part of the British empire; but to complete the work, James publicly sent the Earl of Castlemaine as ambassador extraordinary to Rome, in order to express his obedience to the pope, and reconcile his kingdoms to the Catholic communion. This proceeding was too precipitate to be relished even by the pope himself; and therefore the only return he made to this embassy was the sending a nuncio into England. Soon after this the Jesuits were permitted to erect colleges in different parts of the kingdom, and to exercise the Catholic worship in the most public manner.

In 1686 a second declaration in favour of liberty of conscience was published almost in the same terms with the former, but with this particular injunction, that all divines should read it after service in their churches. The clergy resolved to disobey this order. Loyd, bishop of St Asaph, Kenn of Bath and Wells, Turner of Ely, Lake of Chichester, White of Peterborough, and Trelawney of Bristol, together with Sancroft the primate, concerted an address in the form of a petition to the king, which, with the warmest expressions of zeal and submission, signified that they could not read the declaration consistently with their consciences or the respect they owed the Protestant religion. The king received their petition with marks of surprise and displeasure. He said he did not expect such an address from the church of England, particularly from some amongst them; and persisted in his orders for their obeying his mandate. As the petition had been delivered in private, the king summoned the bishops before the council, and there questioned them whether they would acknowledge it. They for some time declined giving an answer; but being urged by the chancellor, they at last owned the petition. On their refusal to give bail, an order was immediately issued for their commitment to the Tower, and the crown lawyers received directions to prosecute them for a seditious libel. The king gave orders that they should be conveyed to the Tower by water, as the whole city was in commotion in their favour. But the people, when informed of their danger, ran to the river side in great multitudes, craving their blessing, and calling upon Heaven to protect them; whilst the very soldiers by whom they were guarded kneeled down before them and implored their forgiveness. The 29th of June 1686 was fixed for the trial of the bishops. Twenty-nine peers, a great number of gentlemen, and an immense crowd of persons, waited upon them to Westminster Hall. The discussion was learnedly managed by the lawyers on both sides. The jury withdrew into a chamber, where they passed the whole night; but next morning they returned into court, and pronounced the bishops not guilty. Westminster Hall instantly rang with loud acclamations, which were communicated to the whole extent of the city, and even reached the camp at Hounslow, where the king was at dinner in Lord Feversham's tent. His majesty demanded the cause of those rejoicings, and being informed that it was nothing

Reign of James II. but the soldiers shouting for the delivery of the bishops, "Call you that nothing?" said he; "but so much the worse for them."

As the king found the clergymen everywhere averse to his measures, he was willing next to try what he could do with the army, thinking that if one regiment could be brought to promise implicit obedience, their example would soon induce others to comply. He therefore ordered one of the regiments to be drawn up in his presence, and desired that such as were against the late declaration of liberty of conscience should lay down their arms. He was surprised to see the whole battalion ground their arms, except two officers and a few Roman Catholic soldiers. A few days before the acquittal of the bishops the queen was delivered of a son. This, if any thing could at that time, might have served to establish James on the throne; but so violent was the animosity against him, that a story was propagated that the child was supposititious; and the monarch's pride scorned to take any precautions to refute the calumny.

Though the enthusiasm of James himself was sufficiently extravagant, the wildest of his religious projects seem to have been suggested by his enemies in order to accomplish his ruin. The Earl of Sunderland, whom he chiefly trusted, was a man of abandoned principles, insatiable avarice, and fitted by nature for stratagem, deception, and intrigue. The love of money was his ruling passion, and he accordingly sold his influence to the highest bidder. To such a degree was he mercenary, that he became at once the pensioner of the Prince of Orange and of the king of France. The former, who had long fixed his eye on the English throne, watched James's motions, and took every advantage of his errors. He had laid his schemes so extensively, that nothing but the birth of a male heir to the crown of England seemed likely to prevent him from obtaining an almost immediate possession of the kingdom; and he had the address to render two thirds of the powers of Europe interested in his success. The treaty of Augsburg, formed to break the power of France, could not accomplish its object without the accession of England. The house of Austria, in both its branches, preferred their political views to their zeal for the Roman Catholic faith, and promoted the dethronement of James as the only means of humbling Louis XIV. Odeschalchi, who under the name of Innocent XI. then filled the papal chair, was also gained to the measures of the Prince of Orange by other considerations, as well as through his fixed aversion to France.

Seeing the national discontent now raised to the highest pitch, the Prince of Orange resolved to take advantage of it. He began by giving one Dykevelt, his envoy, instructions to apply in his name to every religious sect in the kingdom. To the church party he sent assurances of favour and regard; protesting that his education in Holland had no way prejudiced him against Episcopacy. To the non-conformists he sent exhortations not to be deceived by the insidious caresses of their known enemy, but to wait for a real and sincere protector. In consequence of these insinuations, the prince soon received invitations from the most considerable persons in the kingdom. Admirals Herbert and Russell assured him in person of their own and the national attachment. Henry Sidney, brother to Algernon, and uncle to the Earl of Sunderland, came over to him with assurances of a universal combination against the king. Lord Dumblane, son to the Earl of Danby, being master of a frigate, made several voyages to Holland, and carried from many of the nobility tenders of duty, and even considerable sums of money, to the Prince of Orange. Soon after, the Bishop of London, the Earls of Danby, Nottingham, Devonshire, Dorset, and several other lords, gentlemen, and principal citizens, united in their

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addresses to him, and entreated his speedy descent. The people, though long divided between whig and tory, now joined against their misguided sovereign as against a common enemy. William therefore determined to accept their invitation; and this the more readily, as he perceived that the malcontents had conducted themselves with prudence and secrecy. Having the principal servants of James in pay, he was minutely informed of the most secret actions and designs of that prince. His intelligence came through Sidney from Sunderland, who betrayed the very measures which he himself had advised. The prince had a fleet ready to sail, and troops provided for action, before the beginning of June 1688.

The king of France was the first who gave James warning of his danger, and offered to assist him in repelling it. But he declined this friendly offer, lest it should be said that he had entered into a private treaty with that monarch to the prejudice of the Protestant religion. Being also deceived and betrayed by Sunderland, he had the weakness to believe, that the reports of an invasion were invented in order to frighten him into a strict connection with France. He gave credit to the repeated assurances of the States, that the armament preparing in their ports was not designed against England; nay, he even believed the assertions of the prince himself, whose interest it was to deceive. Sunderland descanted against the possibility of an invasion, and turned into ridicule all who believed the report. Having, with the consent of James, taken possession of all the foreign correspondence, he suppressed every kind of intelligence that might alarm; and all others whom James trusted, except Dartmouth, affected long to place no faith in the reports of an invasion. Louis finding his first offers rejected, next proposed to march down his army to the frontiers of the Dutch provinces, and thus detain their forces at home for their own defence. But this proposal met with no better reception than the former one. Still Louis, unwilling to abandon a friend and ally whose interest he regarded as closely connected with his own, ventured to remonstrate with the Dutch against the preparations they were making to invade England. But the Dutch treated his remonstrances as an officious impertinence, and James himself declined his mediation.

The king of England, having thus rejected the assistance of his friends, and being left to face the danger alone, was astonished with an advice from his minister in Holland, that an invasion was not only projected, but avowed. When he first read the letter containing this information, he grew pale, and the letter dropt from his hand. He saw himself on the brink of destruction, and knew not to whom to apply for protection. In this emergency, Louis wrote to James in his own hand, that to divert the Dutch from their intended invasion of England, he would lay siege to Maestricht with thirty thousand men. James communicated this intelligence to Sunderland, and the latter to the Prince of Orange, by whom six thousand men were thrown into Maestricht; and the design of Louis being thus rendered impracticable, it was laid aside.

James had now no resource but in retreating from those precipitate measures which had plunged him into inextricable distress. He paid court to the Dutch, and offered to enter into any alliance with them for their common security. He replaced, in all the counties of England, the deputy lieutenants and justices who had been deprived of their commissions for their adherence to the test and penal law. He restored the charters of such corporations as he had possessed himself of, annulled the High Commission Court, reinstated the expelled president and fellows of Magdalen College, and even caressed the bishops whom he had so lately persecuted and insulted. But all these

concessions were now too late, and were regarded as the effects of fear, not of repentance.

In the mean time, William set sail from Helvoetsluys with a fleet of near five hundred sail, and an army of above fourteen thousand men. Fortune, however, seemed at first very unfavourable to his enterprise. He was driven back by a dreadful storm; but he soon refitted his fleet, and again set sail for England. It was given out that this invasion was designed for the coast of France; and many of the English, who saw the fleet pass along their coast, little suspected the place of its destination. It happened that the same wind which sent the Dutch to their place of destination, detained the English fleet in the river; so that the Dutch passed the Straits of Dover without molestation, and, after a voyage of two days, landed at Broxholme in Torbay, on the 5th of November 1688, the anniversary of the gunpowder treason.

But although the invitation from the English was general, the prince for some time had the mortification to find himself joined by very few. He continued for ten days in expectation of being joined by the malcontents, and at last was beginning to despair of success, and to deliberate about re-embarking his forces, when he was joined by several persons of consequence; and the whole country soon afterwards flocked to his standard. The first person who went over to the prince was Major Burrington, and he was quickly followed by the gentry of the counties of Devon and Somerset. Sir Edward Seymour made proposals for an association, which was signed by great numbers; and every day there appeared some new proof of that universal combination into which the nation had entered against the measures of the king. This was followed by the defection of the army. Lord Colchester, son to the Earl of Rivers, first deserted to the prince; Lord Cornbury, son to the Earl of Clarendon, carried off the greatest part of three regiments of cavalry at once; and several officers of distinction informed Feversham their general, that they could not in honour fight against the Prince of Orange. Soon after this the unhappy monarch found himself deserted by his own servants and creatures. Lord Churchill had been raised from the rank of page, and had been invested with a high command in the army; he had been created a peer, and owed his whole fortune to the king's bounty; yet even he deserted among the rest, and carried with him the Duke of Grafton, natural son to the late king, besides Colonel Berkeley and others.

In this universal defection, James, not knowing where to turn, began to think of requesting assistance from France, when it was now too late. He also wrote to Leopold, emperor of Germany; but that monarch only returned for answer, that what he had foreseen had happened. James had some dependence on his fleet; but in reality they were entirely disaffected. In a word, his interests were deserted by all, for he had long deserted them himself. His army, however, still amounted to twenty thousand men; and had he led them immediately to battle, it is possible they might then have fought in his favour. But his misfortunes had deprived him of his natural firmness and resolution; and seeing himself deserted by those in whom he thought he could place most confidence, he became suspicious of all, and was in a manner deprived even of the power of deliberation. In this extremity of distress, the Prince of Denmark, and Anne, James's favourite daughter, perceiving the desperation of his circumstances, resolved to take part with the Prince of Orange. Informed of this event, the king was stung with the most bitter anguish. "God help me," said he; "my own children have forsaken me." To add to his distress as a parent, he was accused of being accessory to the death of his own child.

On the 30th of November 1688, James dispatched three

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Reign of James II. noblemen to treat with the Prince of Orange. But though the latter knew very well that the king's commissioners were in his interests, his behaviour showed plainly that he now thought the period for treating was past. For some time he would not admit them to an audience; and when he did, he gave no satisfactory answer. James now began to be alarmed for his personal safety; but what most affected him was the terror of the queen for herself and her infant son. He therefore resolved to send them abroad. They crossed the river in a boat, at Whitehall, on a stormy day, and were carried to Gravesend in a coach, under the conduct of the Count de Lauzun; a yacht, commanded by Captain Gray, which lay there ready for the purpose, soon transported them in safety to Calais.

The king was now so dispirited and distracted, that he resolved to leave the kingdom at once, and thus plunge every thing in confusion. He threw the great seal into the Thames; he left none with any authority to conduct the government in his absence; and he vainly hoped to derive advantage to his affairs from anarchy and disorder. About twelve at night, on the 10th of December, he disguised himself, took a boat at Whitehall, and crossed the river. Sir Edward Hales, with another friend, met him at Vauxhall with horses. He mounted; and being conducted through by-ways by a guide, he passed in the night-time to the Medway, which he crossed by Aylesford-bridge. At Woolpeck he took fresh horses, sent thither before by Shelden, one of his equerries, who was in the secret of his flight. Having arrived at Embsferry near Feversham, he found a custom-house hoy, hired by Sir Edward Hales, lying ready to receive him on board. But the wind blew fresh, and the vessel had no ballast. The master, therefore, easily persuaded the king to permit him to take in some ballast at Shilness. It being half ebb when they ran ashore, they intended to sail as soon as the vessel should be afloat; but when the vessel was almost afloat, she was boarded by three fishing boats belonging to Feversham, containing fifty men, who seized the king and his two companions, under pretence of their being Papists who wanted to escape from the kingdom. They turned up Feversham water with the tide; but still the king remained unknown. Sir Edward Hales placed privately fifty guineas in the hands of the captain, as an earnest of more should he permit them to escape. He promised, but so far from keeping his word, he took what money they had, under pretence of securing it from the seamen; and having possessed himself of their all, left them to their fate. The unfortunate fugitives were at length carried in a coach to Feversham, amidst the insults, clamours, and shouts of the sailors. When the king was brought to the inn, a seaman who had served under him knew him, and melted into tears; and James himself was so much moved at this instance of his affection, that he wept. The other fishermen, who had previously treated him with indignity, when they saw his tears, fell upon their knees. The lower class of inhabitants gathered round him; but the better sort fled from his presence. The seamen, however, formed themselves into a guard, and declared, that "a hair of his head should not be touched." In the mean time, Sir James Oxendon, under pretence of guarding him from the rabble, came with the militia to prevent his escape. The king found a change in his condition when he was taken out of the hands of the sailors. The commanders of the militia showed him no respect; and he was even insulted by the common soldiers. A letter which he intended to send to London for clothes, a change of linen, and some money, were stopped by those who pretended to protect his person.

In the mean time the Prince of Orange exercised in his own person all the functions of royalty. He issued a de-

claration to the disbanded army to re-assemble themselves. He ordered the secretary at war to bring him a list of the king's troops. He commanded the Lord Churchill to collect his troop of horse guards. He sent the Duke of Grafton to take possession in his name of Tilbury Fort. The assembly of peers adjourned to the council-chamber at Whitehall, and, to give the appearance of legality to their meeting, chose the Marquis of Halifax as their president. Whilst this assembly was sitting, on the 13th of December, a poor countryman, who had been engaged by James, brought an open letter from that unfortunate prince to London. It had no subscription; and it was addressed to none. It described in one sentence only, his deplorable condition when in the hands of a desperate rabble. This poor messenger of a fallen sovereign waited long at the council door, without being able to attract the notice of any who passed; but when the Earl of Mulgrave became apprised of his business, his lordship had the courage to introduce him to the council. He delivered his open letter, and told the unhappy state of the king. The assembly were much moved, and sent the Earl of Feversham with two hundred of the guards towards Feversham. His instructions were first to rescue James from danger, and afterwards to attend him to the sea coast, should he wish to retire. He chose, however, to return to London; but the Prince of Orange sent a message to him, desiring him to approach no nearer the capital than Rochester. The messenger missed James by the way; and the king sent Feversham with a letter to the Prince of Orange, requesting his presence in London to settle the nation, while he himself proceeded thither, and arrived on the 16th of December.

The Prince of Orange received the news of his return with little satisfaction. His aim from the beginning was to force him by various means to relinquish the throne. The Dutch guards were ordered to take possession of Whitehall, and to displace the English; and the king was soon after commanded by a message, which he received in bed at midnight, to leave his palace next morning, and to depart for Ham, a seat of the Duchess of Lauderdale's. But he desired permission to retire to Rochester, which was readily granted. The harsh measures of the prince had now taken effect, and the king meditated an escape to France. Surrounded by the Dutch guards, he arrived at Rochester on the 19th of December. The restraint put upon his person, and the manner in which he had been forced from London, raised the indignation of many, and excited the compassion of all. The English army, both officers and soldiers, began to murmur; and had it not been for the timidity and precipitation of James himself, the nation would probably have returned to their allegiance. He remained three nights at Rochester, in the midst of a few faithful friends, the Earls of Arran, Dumbarton, Ailesbury, Litchfield, and Middleton, and, amongst other officers of merit, Lord Viscount Dundee. They all argued against his intended flight; and several bishops, some peers, and many officers, entreated his stay in some part of England. They represented that the opinions of men began to change, and that events would daily rise in favour of his authority. Dundee added his native ardour to his advice. "The question, Sir," said he, "is, Whether you shall stay in England or fly to France? Whether you shall trust the returning zeal of your native subjects, or rely on a foreign power? Here you ought to stand. Keep possession of a part, and the whole will submit by degrees. Resume the spirit of a king. Summon your subjects to their allegiance. Your army, though disbanded, is not dispersed. Give me your commission. I will gather ten thousand of your troops. I will carry your standard at their head through England, and drive before you the Dutch

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Reign of James II. and their prince." The king replied, that he believed it might be done, but that it would raise a civil war, and he would not do so much mischief to a nation that would soon come to their senses again. Middleton urged his stay, though in the remotest part of the kingdom. "Your majesty," said he, "may throw things into confusion by your departure; but it will be but the anarchy of a month. A new government will soon be settled, and you and your family will be ruined."

These spirited remonstrances had no effect upon James. He resolved to quit the kingdom; and having communicated his design to a few of his friends, he left the house where he had lodged at midnight, accompanied by his son the Duke of Berwick, and went in a boat to a smack which lay waiting for him without the fort at Sheerness. In the morning of Tuesday the 25th December, the king landed at Ambletuse in France, and taking post, soon joined his consort at St Germain's.

James having thus abandoned his dominions, the Prince of Orange remained master of all. By the advice of the House of Lords, the only member of the legislature remaining, he was desired to summon a parliament by circular letters; but the prince, unwilling to act upon so imperfect an authority, convened all the members who had sat in the House of Commons during any parliament of Charles II., to whom were added the mayor, aldermen, and fifty of the common council of London; and being thus supported by an assembly deriving its authority from himself, he wrote circular letters to the counties and corporations of England, directing them to return members to this parliament or convention. When the house met, thanks were voted to the Prince of Orange for the deliverance he had wrought; after which they proceeded to settle the kingdom. A vote soon passed both houses, that King James II. having endeavoured to subvert the constitution of the kingdom, by breaking the original contract between the king and the people, and having by the advice of Jesuits and other wicked persons violated the fundamental laws, and withdrawn himself out of the kingdom, had abdicated the government; and that the throne was thereby vacant.

The king being thus deposed, it was easy for William to get himself appointed as his successor. Proposals were indeed made by some for electing a regent; and others were for investing the Princess of Orange with regal power, and declaring the young prince supposititious. But to these proposals William opposed the decisive argument, that he had been called over to defend the liberties of the British nation, and that he had happily effected his purpose; that he had heard of several schemes proposed for the establishing of the government; that, if they chose a regent, he thought it incumbent upon him to inform them that he would not be that regent; that he would not accept of the crown under the princess his wife, though he was convinced of her merits; that therefore, if either of these schemes was adopted, he could give them no assistance in the settlement of the nation, but would return home to his own country, satisfied with his aims to secure the freedom of theirs. Upon this, after a long debate in both houses, a new sovereign was preferred to a regent by a very small majority. It was agreed that the Prince and Princess of Orange should reign jointly as king and queen of England; whilst the administration of government should be placed in the hands of the prince only. The Marquis of Halifax, as Speaker of the House of Lords, made a solemn tender of the crown to their highnesses, in the name of the Peers and Commons of England. The prince accepted the offer; and that very day, the 13th of February 1689, William and Mary were proclaimed king and queen of England.

First measures of William.—National discontents.—Scheme in favour of the Dissenters rejected.—Precarious condition of William's government.—Proceedings in Scotland.—William acknowledged as King.—Attempts of Viscount Dundee in favour of James.—Battle of Killierankie, and death of Dundee.—State of Ireland.—Insurrection in favour of James.—The Protestants take arms in their own defence, and are defeated at Drumore.—Landing of James in Ireland.—Subsequent operations.—Gallant defence of Londonderry.—Odious measures resorted to by James.—Disembarkation of King William's army.—Its composition.—Arrival of William.—Battle of the Boyne, and defeat of James.—Battle of Aughrim, and defeat of St Ruth, James's General.—Siege of Limerick.—Pacification of Ireland.—Affairs of Scotland.—Massacre of Glenco.—Conduct of William respecting this atrocious barbarity.—The Dover expedition.—Violent discontents in Scotland, in consequence of the supposed perfidy of the King.—Plots in favour of James.—France declares in his favour.—Battle of La Hogue, and total defeat of the French fleet under Tourville.—James offered the crown of Poland, which he declined.—Offer by William to secure the succession to the Prince of Wales, James's son, also declined by him.—Death of James.—Conduct of Louis on this occasion.—The Pretender acknowledged by France as king of Great Britain and Ireland.—Death of Queen Mary.—National discontent.—William forced to disband his troops.—Altercations between the King and the Parliament.—Confederacy against France.—Death and Character of William.

William began his reign with issuing a proclamation for continuing in office all Protestants who had been in place on the first of the preceding December. On the 17th of the month he formed his privy council, which consisted chiefly of those persons who had been most active in raising him to the throne. To gratify as many as possible of his friends, the several boards, and even the chancery, were put into commission. The benches of the Exchequer and Common Pleas were filled with persons who had distinguished themselves against the measures of the late king. But the Earl of Nottingham, who had violently opposed the elevation of William, and the Earl of Shrewsbury, who had adhered to his views, were made secretaries of state. The Marquis of Halifax, and the Earl of Danby, though rivals in policy, were admitted into the cabinet; the first as lord privy seal, the second as president of the council. William's Dutch friends in the mean time were not forgotten by the king. Bentinck, his favourite, was made a privy counsellor, groom of the stole, and privy purse; Auverquerque was appointed master of the horse; Zuylstein received the office of master of the robes; and Schomberg was placed at the head of the ordnance.

Though these instances of gratitude were no doubt necessary to William, the generality of the nation were displeased. The Tories were offended at being excluded from favour, especially as they had departed from their usual principles in order to serve him. The nation in general were much prejudiced against foreigners, and universal discontent ensued upon seeing them preferred. The king, who had been bred a Calvinist, was also strongly inclined to favour that sect; and finding the clergy of the church of England but little inclined to take the oaths to the new government, he began openly to indulge his own prejudices in favour of dissenters. Having come to the House of Lords to pass some bills, on the 16th March, he made a speech, urging the necessity of admitting all Protestants indiscriminately into the public service. He informed them, that he was employed in filling up the vacancies in offices of trust; he expressed his hopes that they had become sensible of the necessity of a law to settle the oaths to be taken by such persons as should be admitted into place; and he doubted not, that whilst they

Reign of William and Mary. provided against Papists, they would at the same time leave room for the admission of all Protestants who were able and willing to serve their country. But this proposition was rejected with vehemence. The adherents of the church complained that the ruin which they feared from the Papists in the preceding reign was now to be dreaded from the Protestant dissenters; and they affirmed, that if the established religion was to be destroyed, it mattered little by whose hands it might fall. A bill brought in by the ministry for abrogating the former oaths of supremacy and allegiance was rejected; and an attempt to dispense with the sacramental test was made without success in another form. The court party proposed that any man, by producing a certificate of his having received the sacrament in any Protestant congregation, should be held sufficiently qualified for office. But this motion was also rejected in the House of Lords by a great majority. William repeated his attempts at a comprehension; but he was ultimately unsuccessful, and in the coronation-oath the church party inserted a clause, that the king should maintain the Protestant religion "as established by law."

For these and other reasons the government of William was for some time in a very tottering condition. The king, either through want of health or inclination, interfered but little in the affairs of the nation; Ireland was strangely neglected; whilst Halifax and Danby, who had in a manner raised the king to the throne, caballed with his enemies. They perceived that the people, with the same levity which had induced them to desert their former sovereign, were beginning to be discontented with their new prince. Every thing seemed to tend to a change. Halifax himself declared, that were James to conform with the Protestants, he could not be kept four months from re-ascending his throne; and Danby averred, that, were the late king to give satisfaction for the security of religion, it would be difficult to oppose his restoration. From these apparent discontents of the nation, the friends and emissaries of James assumed more boldness in tampering with the servants of the crown and inflaming the army. The former they alarmed with the prospect of a sudden change; the latter they roused into indignation by the alleged preference shown by William for his countrymen the Dutch.

Though the kingdom of Scotland did not at first recognise the authority of William, yet the party of James never attained sufficient strength to be of any effectual service to him in that kingdom. Thirty Scottish Peers, and near eighty gentlemen, then in London, had waited on the Prince of Orange in the beginning of January, and, without any authority from the regency still subsisting in Edinburgh, formed themselves into a kind of convention. The Prince of Orange in a formal manner asked their advice; and when he withdrew, they adjourned to the council chamber at Whitehall. The Duke of Hamilton being chosen president, explained the distracted state of Scotland, representing, that disorders, anarchy, and confusion prevailed, and urging the necessity of placing the power somewhere till a convention of estates should be called to form a lasting and solid settlement. When the heads of an address to the Prince of Orange had been settled, and ordered to be engrossed, the Earl of Arran unexpectedly arose, and proposed to invite back the king. The meeting, however, adhered to the Prince of Orange, and waited on him in a body, requesting him to take the administration into his own hands. He thanked them for the trust they had reposed in him; and a convention was ordered to meet at Edinburgh on the 14th of March, it being provided that no exception or limitation whatever should be made, except that the members should be Protestants.

This convention, however, was opposed by some of the

partisans of James; and the archbishop of Glasgow, the Earl of Balcarras, and the Viscount Dundee, were authorized by an instrument signed by him, at that time in Ireland, to call a convention of the estates at Stirling. But this measure was disappointed, first by the wavering disposition of the Marquis of Atholl, and afterwards by the procrastination and folly of the party. At last Viscount Dundee, pretending alarm on account of a design alleged to have been formed by the Covenanters to assassinate him, left Edinburgh at the head of fifty horse. As he passed under the walls of the castle, the Duke of Gordon, who then held the command of the fortress, and favoured the cause of James, called him to a conference. Dundee scrambled up the precipice, and informed the duke of his designs in favour of James, at the same time conjuring him to hold out the castle, under a certainty of being relieved. The novelty of the sight collected a multitude of spectators. The convention took the alarm. The president ordered the doors to be locked, and the keys to be laid upon the table. The drums beat to arms in the town; and a parcel of ill-armed retainers were gathered together in the street by the Earl of Leven. Dundee in the mean time rode off with his party. But as soon as they found themselves secure, the Duke of Hamilton adjourned the convention, which relieved the adherents of James from dreadful apprehensions for their own safety. Fifty members retired from Edinburgh; and that circumstance produced unanimity in all the succeeding resolutions of the convention. Soon after this it was determined in a committee that James had "forefaulted" his right to the crown, by which was meant that he had perpetually excluded himself and his whole race from the throne, which was thereby become vacant. This resolution being approved by the convention, another was drawn up raising William and Mary to the vacant throne; and in consequence they were publicly proclaimed at Edinburgh on the 11th of April 1689.

The castle of Edinburgh was still kept in the name of James by the Duke of Gordon; but despairing of any relief, and pressed by a siege, his Grace surrendered it on the 13th of June, upon honourable terms. The adherents of James, terrified at this unexpected misfortune, now turned their eyes to the Viscount Dundee, who having been in vain urged by the convention to return, was at length declared a fugitive, an outlaw, and a rebel. General Mackay had been sent to Scotland by William, with four regiments of foot and one of dragoons. But Dundee, apprised of the general's design to surprise him, retired to the Grampian Mountains with a few horse, and thence marched to Gordon Castle, where he was joined by the Earl of Dunfermline with fifty gentlemen. He next passed through the county of Moray to Inverness, which Macdonald of Keppoch had invested with seven hundred men, after having ravaged the lands of the clan of Mackintosh in his way from his own country. Dundee promised to the magistrates of Inverness to repay, at the king's return, the money extorted from them by Macdonald, and thus induced the latter to join him with all his men. But as he could not prevent the Highlanders from first returning home with their spoil, he accompanied them to Lochaber, and on the 8th of May arrived in Badenoch, whence he wrote letters to the chiefs of the different clans, appointing them to meet at a general rendezvous in Lochaber on the 18th of the same month. In the mean time, passing suddenly through Athole, he surprised the town of Perth, and hoping to gain over two troops of Scottish dragoons who lay at Dundee, he marched suddenly to that place; but the fidelity of Captain Balfour, their commander, disappointed his views. Dundee then returned through Athole and Rannoch to hold the diet of rendezvous at Lochaber; and

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there he was reinforced by several Highland chieftains, so that his little army was increased to about fifteen hundred men. He now turned against Mackay, who had advanced to Inverness, but on the approach of Dundee retreated to Strathbogie, leaving the whole Highlands exposed to the enemy.

But notwithstanding this partial success, Dundee found himself surrounded with many difficulties. The officers of the Scottish dragoons, who maintained a secret correspondence with him, sent him false intelligence, as an excuse for their own fears, informing him that a party of Irish, who had endeavoured to land in Scotland under the Duke of Berwick, were driven back, and the duke himself taken prisoner; and that Mackay had been reinforced with a regiment of English horse, and another of foot. Crediting this information, Dundee retreated to Badenoch; the natives of the low country who served in his little army quitted him without leave; the Highlanders plundered the country wherever they went; and he himself at last fell sick, while Mackay hovered on his rear. A slight skirmish occurred, in which the Highlanders had the advantage; but they nevertheless lost their baggage during the action. Dundee at length arrived at Ruthven; but Mackay, reinforced with a body of twelve hundred men, advanced against him, and other regiments had arrived at Perth and Dumblane, on their way to join. The Highlanders now deserted every night by hundreds, and their leader was forced to retire to Lochaber, where only two hundred of his whole force remained with him; whilst, to complete his misfortunes, he at the same time received intelligence of the surrender of the castle of Edinburgh.

Meanwhile, letters having arrived from King James promising immediate succours from Ireland, Dundee ordered the neighbouring clans to assemble round his standard. But still he wanted the necessary means for prosecuting the war. The Highlanders were armed only with their own proper weapons, and he had no more than forty pounds weight of powder in his whole army. All difficulties, however, were surmounted by the activity of the general, for whom his army entertained an enthusiastic zeal. Having collected a force of about two thousand five hundred men, including three hundred Irish recruits, he resolved to give battle to Mackay, who, with a force considerably superior in numbers, was advancing against him. The encounter took place on the 17th of July 1689, near the head of the Pass of Killikrankie. The Highlanders took post on the face of a hill, a little above the house of Urrard, and to the westward of the great Pass; whilst the king's forces were drawn up on a level piece of ground, in the form of an amphitheatre, bounded on two sides by the heights, and on the third by the river Garry. Dundee delayed his attack until about sunset, when suddenly the Highlanders rushed down like furies, covering themselves from the fire of the king's troops with their targets. "At last," says an eye-witness, "they cast away their muskets, drew their broadswords, and advancing furiously on the king's troops, broke them, and obliged them to retreat; some flying to the water, some another way." The charge was like a torrent, fierce, rapid, irresistible; and the rout complete. The 21st or Scotch fusiliers was on the left of General Mackay's front line, Hastings' and Leslie's, now the 13th and 15th regiments, in the centre, and Lord Leven's, now the 25th, on the right; the whole consisting of two regiments of cavalry and nine battalions of infantry. After the right of the line had given way, the regiments on the centre and the left, which were covered by the river Garry and the woody precipice below the house of Urrard, kept their ground, and for a short time withstood the shock of the Highland charge with the broadsword; but at length they gave way on all sides, Hast-

ings' flying through the Pass on the north side, and the fusiliers dashing across the river, followed by the Highlanders. But Dundee having fallen early in the attack, the consternation occasioned by his death prevented an immediate pursuit through the great Pass. Had they been closely followed, and had a few men been placed at the southern entrance, not a man of the king's troops would have escaped to tell the story of their defeat. As it was, they lost nearly two thousand men, and the remainder were completely broken and dispersed. But the victory, though gallantly achieved, was productive of nothing but barren glory; and with the fall of Dundee ended all the hopes of James in Scotland. Colonel Cannon, who succeeded him in the command, possessed neither his popularity nor his abilities. After some insignificant actions, in which the valour of the soldiers was more conspicuous than the conduct of their leader, the Highlanders dispersed in disgust; and the war soon afterwards ended favourably for William, without the trouble of repulsing his enemies.

During the troubles in England, which had terminated in placing William on the throne, the two parties in Ireland were kept in a kind of tranquillity by their mutual fears. The Protestants were terrified at the prospect of another massacre; and the Catholics expected every day to be invaded by the united force of the English and Dutch. Their terrors, however, were ill founded; for although Tyrconnel sent several messages to the prince, stating his readiness to deliver up the kingdom to any force that might make a surrender decent, his offers were always rejected. This is said to have been owing to Halifax, who is alleged to have represented to the king, that if Ireland yielded, no pretence would remain for keeping an army in pay; that without an army to protect his authority, he might be as easily turned out as he had been brought in; that the English nation could never remain long in a state of contentment; and that they had already begun to show symptoms of strong disaffection with the new government.

Tyrconnel, disappointed in his views of surrendering Ireland to the Prince of Orange, affected to adhere to King James. The whole military force of the kingdom at that time amounted only to four thousand men, and of these six hundred were in Dublin; whilst all of them were so much disposed to quit the service, that the lord-deputy was obliged to issue commissions for levying new forces. The effect of this was, that there suddenly appeared in various parts of the kingdom a half-armed rabble, who, having no pay from the king, subsisted by depredation, and disregarded all discipline. The Protestants in the north armed themselves in their own defence; and the city of Londonderry, relying on its situation, and a slight wall, shut its gates against the newly-raised army. Protestant parties also appeared everywhere, declaring their resolution to unite in self-defence, to preserve the Protestant religion, to continue their dependence on England, and to promote the meeting of a free parliament.

In these circumstances William sent General Hamilton, an Irishman and a Roman Catholic, to treat with Tyrconnel; but instead of persuading that lord to yield to William, Hamilton advised him to adhere to James. In the mean time James himself assured the lord-deputy that he was ready to sail from Brest with a powerful armament; upon which Hamilton marched against the northern insurgents, who were routed with considerable slaughter at Drumore, whilst Hillsborough, where they had fixed their head-quarters, was taken without resistance. The city of Londonderry, however, resolved to hold out to the last extremity.

On the 7th of March 1689, James embarked at Brest.

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and Mary. The whole force of his expedition consisted of fourteen ships of war; six frigates, and three fire-ships; whilst twelve hundred of his native subjects in the pay of France, and a hundred French officers, composed his army. He landed at Kinsale without opposition on the 12th of the month; and his first care was to secure, in the fort, the money, arms, and ammunition which he had brought from France, and to put the town in some posture of defence. This done, he advanced to Cork, where Tyrconnel arrived soon after, and brought intelligence of the rout at Drumore. The king was so much pleased with his attachment and services, that he created him a duke, and then began his advance towards Dublin. But the condition of the rabble who flocked to his standard was not calculated to raise his hopes of success. Their very numbers distressed their sovereign, and ruined the country; insomuch that James resolved to disband the greatest part of them. More than one hundred thousand were already on foot in the different parts of the island. Of these he reserved fourteen regiments of horse and dragoons, and thirty-five regiments of foot; the rest he ordered to their respective homes, and armed those who were retained in the best manner he could.

On reaching Dublin, James immediately proceeded to business. He ordered all Protestants who had abandoned the kingdom to return; he commanded all Papists, except those in his army, to lay aside their arms, and put an end to the depredations which they had committed in the excess of their zeal; he raised the value of the currency by proclamation; and he summoned a parliament to meet on the 7th of May, in order to settle the affairs of the kingdom. The Protestant clergy represented their grievances in an address; and the university of Dublin appeared with complaints and congratulations. He assured the first of his absolute protection, and a full redress; and he promised the latter not only to defend, but even to enlarge, their privileges.

On the 8th of April he left Dublin, resolving to lead his army against the insurgents in person; but as they retired before him, he resolved to lay siege to Londonderry. The place, however, made a vigorous resistance; but being reduced to the last extremity, it would have been obliged to surrender had it not been relieved on the 28th of July by seven ships laden with provisions, upon which the siege was immediately raised. In the mean time, the distressed situation of James, and his absolute dependence upon France, drove him to the adoption of measures equally odious and impolitic. His soldiers had for some time been supported by their officers, or subsisted by depredation. But the funds of the officers were at length exhausted, and the country itself could no longer endure the riot and injustice of the soldiers. Pressed by these difficulties, he resolved, by the advice of his council, to coin copper pieces, which should be received in lieu of silver. The inconveniences and iniquity of this measure were obvious; but all Ireland possessed not the means of paying the army in current coin till the middle of June. Of the French remittances only 200,000 livres remained; and the king found it absolutely necessary to reserve that sum, in order to forward his measures regarding Britain, and to procure intelligence of the motions of his enemies. The army was satisfied even with this mock semblance of money, and the people received the fictitious coin in hopes of being repaid in a more favourable state of affairs. A tax of £20,000 a month, granted for thirteen months by the parliament, furnished government with an appearance of resources; and in the mean time the king endeavoured to support the former revenue by opening a trade with France to supply the want of commerce with England.

To add to the distress of James, Ireland was now invaded by ten thousand men under the command of the Duke of Schomberg. On the 12th of August 1689, they appeared in ninety transports, on the coast of Donaghadee, in the county of Down; and next day Schomberg landed his army, horses, and train of artillery, without opposition. On the 15th he marched to Belfast, and continued in that place four days to refresh his troops. He then invested Carrickfergus, and threw into it a thousand bombs, which laid the houses in ashes. When the garrison had expended their powder to the last barrel, they marched out with all the honours of war; but Schomberg's soldiers broke the capitulation, disarmed and stripped the inhabitants, without regard to sex or quality, and perpetrated many disgraceful cruelties by way of retaliation on the Papists. Schomberg was an experienced general, who had passed a life of eighty years almost continually in the field; yet he found himself at a loss how to carry on the war with Ireland. Not considering the dangers which threatened the health of his troops by confining them too long in one place, he kept them encamped in a low damp situation near Dundalk, almost without fuel; the consequence of which was, that the men were seized with fevers and fluxes, and died in great numbers. Nor were the enemy less afflicted with similar disorders. In both camps sickness prevailed; and as the rainy season was now approaching, the hostile armies, after remaining for some time in sight of each other, quitted their camps at the same time, and retired into winter quarters.

The ill success of this campaign, and the miserable situation of the Protestants in Ireland, at length induced William to attempt their relief in person. Accordingly, he left London on the 4th of June 1690, and arrived on the 14th at Carrickfergus; whence he passed to Lisburn, the head-quarters of the Duke of Schomberg. At Lough-Britland he reviewed his army, which amounted to thirty-six thousand men, consisting of English, Dutch, Germans, Danes, and French; and being supplied with every necessary, as well as in high health and spirits, they seemed certain of victory. The Irish army abandoned Ardee at their approach, and fell back to the south of the Boyne, where they were joined by James, who had marched from Dublin at the head of his French auxiliaries. The banks of the Boyne were precipitous, and on the south side the ground was hilly, and intersected with ditches. The river itself was deep, and it rose to a considerable height in consequence of the tide. These advantages induced James, contrary to the opinion of his officers, to maintain possession of this post. His army was inferior in numbers, in discipline, and in every other quality, to that of his adversary; but convinced that a retreat would dispirit his troops, and tarnish his own reputation, he resolved to put the fate of Ireland on the issue of a battle. William had no sooner arrived on the ground than he rode along the river in sight of both armies, to examine the position of the hostile force, and make proper dispositions for battle; but being observed by the enemy, a cannon was privately brought out and pointed against the spot where for the moment he stood. The shot killed several of his followers, and he himself was slightly wounded in the shoulder. The report of his being slain was instantly propagated throughout the Irish camp, and even transmitted to Paris; but as soon as his wound was dressed, William rode through the camp, and quickly undeceived his army. The next day, being the 30th of June, the battle began at six o'clock in the morning. William directed the river to be forded in three different places, and the attack to be simultaneously commenced from as many points. Schomberg, with the right wing, consisting of ten thousand men, passed the fords up the river, traversed a bog on the opposite side, and attacked

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with great impetuosity the left of James, which, after a short resistance, gave way, and retired precipitately to secure the Pass of Dunleck, which formed the only line of retreat. The centre next crossed the river, but were gallantly opposed by the French and Irish, with whom they maintained a doubtful contest, till William, passing the river farther down at the head of his cavalry, threatened the enemy's flank, and forced them to fall back on the rest of the army of James, which was retiring in a body around their king. The left met with little or no resistance from the force opposed to them; and, indeed, the whole of James's dispositions seem to have been made for retreat rather than for battle. Hence, with a comparatively small loss, William succeeded in forcing his position at all points, and in establishing his whole army on the opposite bank of this deep and difficult river. Whilst the armies were yet engaged, James, who had so often shown the most heroic courage in battle, rode ingloriously off the field. This dispirited his troops, who fell into irretrievable disorder, and fled in all directions, neglecting his injunction to defend the Pass of Dunleck, and leaving nearly two thousand men killed and wounded on the field. The loss sustained by William's army was, owing to the difficult nature of the ground, considerably greater, though much inferior to what it would have been if James had skilfully availed himself of the strength of his position, and headed the columns of attack as they debouched from the fords. Among the slain was the brave Duke of Schomberg. He was killed by a discharge from his own troops, who, not knowing that he had been accidentally hurried into the midst of the enemy, fired upon the body of men who surrounded him. When James first deserted his troops, O'Regan, an old Irish captain, was heard to observe, that if the English would exchange generals, the conquered army would fight them over again. James withdrew precipitately to Waterford, where he immediately embarked for France.

But the victory at the Boyne was by no means decisive, and the adherents of James resolved to continue their opposition. Sarsfield, a popular and experienced general, put himself at the head of the army which had been routed at the Boyne, and took measures for defending the banks of the Shannon. But James superseded him in the command, which he conferred on St Ruth, a proceeding which gave great dissatisfaction to the Irish. On the other hand, General Ginckel, who had been appointed to command the English army in the absence of William, who had gone over to England, advanced towards the Shannon to meet the enemy. The only place where the river was fordable was at Athlone, a strong walled town, situated on both banks of the river, and in the possession of King James's party. The English soon made themselves masters of that part which was on the one side of the river; but the part on the opposite bank being defended with great vigour, it was resolved in a council of war that a forlorn hope should ford the stream in the face of the enemy; and this desperate enterprise being performed with great resolution, the enemy were driven from their works, and the town surrendered at discretion. St Ruth marched to its relief, but he came too late, and, as he approached, his own guns were turned against him. Upon this he instantly counter-marched, and took post at Aughrim, ten miles distant, where he determined to wait the English army. Ginckel, though he had only eighteen thousand men, whilst the Irish were above twenty-five thousand strong, did not decline the combat. A fierce contest ensued; but St Ruth having fallen, his troops gave way on all sides, and retreated in disorder to Limerick, where they determined to make a final stand, after having lost near five thousand of their best men.

Ginckel, wishing to put an end to the war at once, suf-

fered as many of the Irish as chose, to retire to Limerick. In this last retreat, however, the Irish forces made a brave defence. The siege commenced on the 25th of August 1691; and six weeks were spent before the place without any decisive effect. The garrison was well supplied with provisions, and provided with all means of defence. On the other hand, the winter was approaching, and Ginckel had orders to finish the war upon any terms. Accordingly, he offered conditions to the Irish, which, even had they been victors, they could scarcely have refused with prudence. He agreed that all persons in arms should be pardoned; that their estates should be restored, their attainders annulled, and their outlawries reversed; that none should be liable for debts incurred through deeds done in the course of hostilities; that all Roman Catholics should enjoy the same toleration in regard to their religion as in the reign of Charles II.; that the gentry should be permitted to retain their arms; that the inferior class should be allowed to exercise their various callings and professions; that no oath but that of allegiance should be required of any one; and that if the troops, or any number of them, should choose to enter into any foreign service, they should be conveyed to the Continent at the expense of the king. Sarsfield, who had obtained the title of Earl of Lucan from James after his abdication, was permitted to retain a dignity which the laws could not recognise. The lords justices having arrived from Dublin on the 1st of October, signed the articles along with Ginckel, and thus the Irish Catholics put a period to a war which threatened their party with absolute ruin. In consequence of this treaty, about fourteen thousand of those who had fought for King James passed over to France in transports provided by government for conveying them thither; and in this manner all James's expectations from Ireland were entirely frustrated, and the kingdom submitted quietly to the English government.

In the beginning of the year 1692 an action of unexampled barbarity disgraced the government of William in Scotland. In the August preceding, a proclamation had been issued, offering an indemnity to such insurgents as should take the oaths to the king and queen on or before the last day of December; and the chiefs of such tribes as had been in arms for James soon after took advantage of the proclamation. But Macdonald of Glenco was prevented by accident rather than design from tendering his submission within the limited time. In the end of December he went to Colonel Hill, who commanded the garrison in Fort William, to take the oaths of allegiance to the government; and the latter having furnished him with a letter to Sir Colin Campbell, sheriff of the county of Argyle, directed him to repair immediately to Inverary to make his submission in a legal manner before that magistrate. But the way to Inverary lay through almost impassable mountains, the season was extremely rigorous, and the whole country was covered with a deep snow. Soeager, however, was Macdonald to take the oaths before the limited time should expire, that, though the road lay within half a mile of his own house, he stopped not to visit his family, and, after various obstructions, arrived at Inverary. The time had elapsed, and the sheriff hesitated to receive his submission; but Macdonald prevailed by his importunities, and even tears, in inducing that functionary to administer to him the oath of allegiance, and to certify the cause of his delay. At this time Sir John Dalrymple, afterwards Earl of Stair, being in attendance upon William as secretary of state for Scotland, took advantage of Macdonald's neglecting to take the oaths within the time prescribed, and procured from the king a warrant of military execution against that chief and his whole clan. This was done at the instigation of the Earl of Breadalbane, whose

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lands the Glenco men had plundered, and whose treachery to government in negotiating with the Highland clans Macdonald had himself exposed. The king was accordingly persuaded that Glenco was the main obstacle to the pacification of the Highlands; and the fact of the unfortunate chief's submission having been concealed, the sanguinary orders for proceeding to military execution against his clan were in consequence obtained. The warrant was both signed and countersigned by the king's own hand; and the secretary urged the officers who commanded in the Highlands to execute their orders with the utmost rigour. Campbell of Glenlyon, a captain in Argyll's regiment, and two subalterns, were ordered to repair to Glenco on the first of February with a hundred and twenty men. Campbell, being uncle to young Macdonald's wife, was received by the father with all manner of friendship and hospitality. The men were lodged at free quarters in the houses of his tenants, and received the kindest entertainment. Till the 13th of the month the troops lived in the utmost harmony and familiarity with the people; and on the very night of the massacre the officers passed the evening at cards in Macdonald's house. In the night Lieutenant Lindsay, with a party of soldiers, called in a friendly manner at his door, and was instantly admitted. Macdonald, while in the act of rising to receive his guest, was shot dead through the back with two bullets. His wife had already dressed; but she was stripped naked by the soldiers, who tore the rings off her fingers with their teeth. The slaughter now became general, and neither age nor infirmity was spared. Some women, in defending their children, were killed; boys, imploring mercy, were shot dead by officers on whose knees they hung. In one place nine persons, as they sat enjoying themselves at table, were butchered by the soldiers. In Inverriggon, Campbell's own quarters, nine men were first bound by the soldiers, and then shot at intervals, one by one. Nearly forty persons were massacred by the troops; and several who fled to the mountains perished by famine and the inclemency of the season. Those who escaped owed their lives to a tempestuous night. Lieutenant-colonel Hamilton, who had received the charge of the execution from Dalrymple, was on his march with four hundred men, to guard all the passes from the valley of Glenco; but he was obliged to stop by the severity of the weather, which proved the safety of the unfortunate clan. Next day he entered the valley, laid the houses in ashes, and carried away the cattle and spoil, which were divided among the officers and soldiers.

It can scarcely be imagined that a massacre attended with circumstances of such unparalleled treachery and cruelty could pass without some animadversion at the time, or escape the indignant reprobation of history afterwards. However willing we may be to ascribe to the immediate agents in this horrid business all that is most revolting and hideous in the execution of the sanguinary warrant obtained by Secretary Dalrymple at the instigation of Breadalbane, and to transfer to them a large share of the guilt and odium which will ever attach to it, still, after all allowances are made, it is impossible to exculpate William from knowingly consenting to a proceeding which nothing but dire necessity could ever justify. That he was beset by sanguinary ministers, and kept in ignorance of the fact of Macdonald's submission, may be readily admitted; but it will also be observed that he signed and countersigned an order for exterminating a whole clan without instituting any previous inquiry; and that afterwards, when the truth became known, no punishment was inflicted on the instigators of the massacre. Besides, the extraordinary precaution of Secretary Dalrymple in requiring the king to countersign the order to which he had already affixed

his sign-manual, a thing altogether unusual and unprecedented, might well have excited suspicion in the mind of William; nor, with the knowledge of this fact, coupled with the neglect of all inquiry in the first instance, and the impunity of the instigators of the crime afterwards, is it easy to believe that this otherwise excellent prince was altogether free of guilty participation in the foul and bloody tragedy of Glenco.

To efface the remembrance of this massacre, and to blink the inquiry which had been commenced, the king now caused his commissioner to declare in the Scottish parliament, "That if the members found it would tend to the advancement of trade that an act should be passed for the encouragement of such as should acquire and establish a plantation in Africa, America, or any other part of the world where plantations might be lawfully acquired, that his majesty was willing to declare he would grant to the subjects of this kingdom, in favour of these plantations, such rights and privileges as he granted in like cases to the subjects of his other dominions." Relying on this and other flattering promises, the nobility and gentry of Scotland advanced L.400,000 towards the establishment of a company for carrying on an East and West India trade; and twelve hundred veterans who had served in King William's wars were sent to effect a settlement on the isthmus of Darien or Panama, which, from its situation, was equally adapted for trading with both the Indies. The new colony was well received by the natives, and matters began to wear a promising aspect, when the king, at the earnest solicitations of the English and Dutch East India Companies, resolved to gratify the latter at the expense of his Scottish subjects, and sent orders to the governor of Jamaica and the English settlements in America to issue proclamations, prohibiting, under the severest penalties, all his majesty's subjects from holding any correspondence with the Scottish colony, or assisting it in any way with arms, ammunition, or provisions. Thus the new settlers were abandoned to their fate, although many of them had been covered with wounds in fighting the king's battles; and thus vanished all the hopes of the Scottish nation, which had engaged in the design with incredible alacrity, and with sanguine expectations that the misfortunes of their country would, by this new channel of commerce, be completely healed. The distresses of the people, upon receiving authentic accounts of the fortune of their colony, scarcely admit of any description; and the whole nation joined in reproaching their sovereign with double dealing, inhumanity, and base ingratitude, to a people who had lavished their treasure and best blood in support of his government, and in the gratification of his ambition.

But the total reduction of Ireland, and the dispersion and extermination of the Highland chieftains who favoured his cause, did not entirely put an end to the hopes of James. His chief expectations were founded on a conspiracy among his English adherents, and in the succours promised him by the French king. A plot was first formed in Scotland by Sir James Montgomery, a person who, from being an adherent of William's, now turned against him; but as the project was ill contrived, so it was as lightly discovered by the instigator. To this succeeded another, which seemed to threaten more serious consequences, as it was managed by the Whig party, the most formidable in the state, a number of whom joined themselves to the Tories, and made advances to the late king. They assembled together; and, in order to lose no time, it was resolved to send over to France two trusty persons, Lord Preston and Mr Ashton, to consult with the exiled monarch. Both of them, however, were seized by order of Lord Caermarthen, and condemned. Ashton was executed without making any confession; but Lord Preston

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wanted equal virtue or resolution, for on an offer of pardon, he discovered a great number of associates, amongst whom were the Duke of Ormond, Lord Dartmouth, and Lord Clarendon.

The French having at last become sensible of their bad policy in not better supporting the cause of James, resolved to attempt a descent upon England in his favour; and, in pursuance of this scheme, James was supplied with an army consisting of a body of French troops, some English and Scottish refugees, and the Irish regiments which had been transported into France from Limerick, and by long discipline and severe duty had become excellent soldiers. This army was assembled between Cherbourg and La Hogue, and commanded by King James in person. More than three hundred transports were provided for landing the expedition on the opposite coast; and Tourville, the French admiral, at the head of sixty-three ships of the line, was appointed to favour the descent; his orders being at all events to attack the enemy in case they should oppose him. Every thing therefore promised a change of fortune to the exiled king, and he might now entertain hopes of recovering his crown. But these preparations on the side of France were soon known at the English court, and measures taken for a vigorous and effective resistance. The secret machinations of the banished king's adherents were discovered to the English ministry by spies; and it was thus found that the Tories were more faithful than even the Whigs, who had placed King William on the throne. The Duke of Marlborough, Lord Godolphin, and even the Princess Anne herself, were violently suspected of disaffection.

Preparations, however, were made with great tranquillity and resolution, to resist the coming storm. Admiral Russell was ordered to put to sea with all possible expedition; and he soon appeared with ninety-nine ships of the line, besides frigates and fire-ships. At the head of this formidable fleet he set sail for the coast of France; and, near La Hogue, he discovered the enemy under Tourville, who prepared to give him battle. The engagement began between the two flag ships with the greatest fury, and the rest of the ships in succession followed their example. The battle lasted ten hours; but at length victory declared in favour of numbers, and the French fled for Conquet road, having lost four ships in the action. The pursuit continued for the two days following. Three French ships of the line were destroyed on the day succeeding the principal conflict; and eighteen more, which had taken refuge in the bay of La Hogue, were burnt by Sir George Rooke. The ships were drawn up in the shallows, and seemed to be secure against attack; but nothing could resist the bravery and enterprise of the British seamen, who, crowding in barges, under cover of such frigates as could be brought sufficiently near, boarded the enemy's ships, overpowered their crews, and then set them on fire. When James beheld his late subjects thus daringly occupied in completing the destruction of the French fleet, he could not restrain his admiration of their gallantry; and, whilst witnessing the wreck of all his hopes, exclaimed, "Ah, none but my brave English could do this." And thus were frustrated the preparations of France, which from this time seemed to relinquish all claims to the empire of the ocean.

The battle of La Hogue, which took place on the 21st of May 1692, put a final period to the hopes of James. No further attempts were made in his favour, except some plots to assassinate King William, which ended only in the destruction of those who had formed them. But it was never thoroughly proved that James countenanced these designs; and it rather appears that he expressed abhorrence of such attempts. In 1697 the Abbé de Polignac,

ambassador of France to Poland, wrote to his master that thoughts were entertained of the late king of Britain in the new election which happened on the death of John Sobieski; and that James had already been named by some of the diet as his successor. Louis was eager to seize an opportunity of ridding himself with honour of a prince whose pretensions he could no longer support; and the friends of James were also sanguine as to the project; but he himself refused it. The same year, at an interview between King William and Louis XIV. it was proposed that the Prince of Wales, James's son, should succeed to the throne of England after the death of William. William with little hesitation agreed to this request, and even engaged to procure the repeal of the act of settlement, and the passing of another declaring the Prince of Wales his successor to the throne. But this proposal was also rejected by James. He told the king of France, that though he could endure with patience the usurpation of his nephew, he would never permit his own son to be guilty of the same injustice; that should his son reign in his father's life-time, that circumstance would amount to a formal renunciation; and that the Prince of Wales, by succeeding to the Prince of Orange, would thereby yield his sole right, which devolved to him through his father alone.

From this time James lost every hope of being restored to the throne, and resigned himself entirely to religious austerities. His constitution, though vigorous and athletic, had for some time begun to yield to the infirmities of age, and to that melancholy which superstition, uniting with misfortune, had impressed on his mind. In the beginning of September 1701, whilst he was at public prayers, according to his daily custom, he fell suddenly into a lethargy; and though he recovered his senses soon after, he languished for some days, and expired on the 6th of September. The French king paid him several visits during his sickness, and exhibited every symptom of compassion, affection, and even respect.

Embarrassed as to how he ought to proceed upon the unexpected death of James, Louis called a council to deliberate whether he should acknowledge the Prince of Wales as king of Great Britain and Ireland. The king himself had hesitated long in this delicate point; but the Dauphin, the Duke of Burgundy, and all the princes of the blood, declared that it would be unbecoming the dignity of the crown of France not to own that the titles of the father had devolved immediately on the son. Louis approved of this view, and determined in person to acquaint the dying king with his resolution. When he arrived at St Germain, James lay almost insensible from his disorder; but rousing himself, he began to thank his most Christian majesty for all his favours. Louis, however, interrupted him: "Sir," said he, "what I have done is but a small matter; but what I have to say is of the utmost importance." The people then began to retire, but Louis ordered them to remain. "I come to acquaint you, Sir," he added, "that when God shall please to call your majesty from this world, I shall take your family under my protection, and acknowledge your son as king of Great Britain and Ireland."

Though the defeat of the French fleet at La Hogue had put an end to all danger of any further attempt from that quarter, William by no means possessed his throne in any degree of tranquillity. The want of a common enemy produced dissensions amongst the people, and the king began to experience as much trouble from his parliament at home as from any enemy in the field. The uneasiness he felt on account of the refractory disposition of his subjects was not a little heightened by the death of his queen, who was carried off by the small-pox on the 28th of December 1694. The grief he felt for her loss

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was deep and sincere; but all private concerns were soon merged in the greatness of his apprehensions for the balance of power and the fluctuating interests of Europe. William's chief motive for accepting the crown had been to engage England more deeply in the concerns of Europe; and as his great object had been to humble the French, so his politics mainly consisted in forming alliances against France. But many of the English had no such animosity against that country; and considering the interest of the nation as sacrificed to foreign connections, they complained that the continental war fell most heavily on them, though they had the least interest in its success. These complaints were at first heard by William with indifference; and he continued to bestow all his attention on the balance of power and the interests of Europe. But in attending to foreign affairs he overlooked internal polity; and, as he formed alliances abroad, he increased the influence of party at home. In accepting the crown, William had resolved to preserve as much of the prerogative as could decently be retained; and he sometimes exerted a branch of it, the power of refusing his assent to bills which had passed both houses, with equal firmness and decision. Hence perpetual bickerings took place between him and his parliaments. But William at last became fatigued with opposition, and admitted every restraint which they chose to impose on the prerogative in England, upon condition of being properly supplied with the means necessary for humbling France.

The war with France continued during the greatest part of this king's reign; but at length the treaty of Ryswick, in 1697, put an end to a contest in which England had engaged without policy, and from which she came off without advantage. In the general pacification her interests seemed entirely neglected; and for all the treasures she had transmitted to the Continent, and all the blood which had been shed there, the only equivalent received was an acknowledgment of William's title by the king of France.

The king being now freed from foreign war, set himself to strengthen his authority at home; and as he could not endure the thoughts of a king without an army, he conceived hopes of keeping up, in time of peace, those forces which had been granted him during the time of danger. The Commons, however, to his great mortification, passed a vote that all the forces in the pay of England, exceeding seven thousand men, should be forthwith disbanded, and that those retained should be natural-born subjects of England. At this vote the king's indignation was kindled to such a degree, that he actually conceived a design of abandoning the government. From this, however, his ministers diverted him, and persuaded him to consent to the passing of the bill.

These altercations continued during the remainder of this reign. William considered the Commons as a body of men desirous of power for themselves, and consequently bent upon obstructing all his projects for securing the liberties of Europe; and he seemed but little attached to any particular party in the house, all of whom he found at times deserted or opposed him. He therefore inclined to Whigs and Tories indiscriminately, as interest or the immediate exigency demanded. He considered England as a place of labour, anxiety, and altercation. If he had any time for amusement or relaxation, he retired to Loo in Holland, where, among a few friends, he indulged in such festivities as he was capable of relishing. Here he planned the succession of the different princes of Europe, and laboured to undermine the schemes and the power of Louis, his rival in politics and fame. But however feeble might be William's desire of other amusements, he could scarcely exist without being at variance with France. Peace had hardly been concluded with that nation when

he began to think of resources for carrying on a new war, and enlisting his English subjects in a confederacy against France. Several arts were used for inducing the people to second his aims; and the whole nation seemed at last to join in desiring a French war. He had been in Holland concerting with his allies operations for a new campaign; and he had entered into a negotiation with the Prince of Hesse, who assured him that if he would besiege and take Cadiz, the admiral of Castile and several other grandees of Spain would declare for the house of Austria. The Elector of Hanover had concurred in the same measures; the king of the Romans, and Prince Louis of Baden, undertook to invest Landau; and the emperor promised to send a powerful reinforcement into Italy. But death unexpectedly put a period to the projects and ambition of this prince, who, with all his defects, was, in many particulars, a truly great man.

William was naturally of a very feeble constitution; and by this time it had become almost quite exhausted by a series of continual disquietude and action. He had endeavoured to repair his strength, or at least to conceal its decay, by exercise on horseback. But on the 21st of February 1702, whilst riding to Hampton Court from Kensington, his horse fell under him, and he was thrown with such violence that his collar-bone was fractured. His attendants conveyed him to the palace at Hampton Court, where the fracture was reduced; and in the evening he returned to Kensington in his coach. But the jolting of the carriage disunited the fracture; and although the bones were again replaced by Bidloo his physician, this accident proved ultimately fatal. For some time indeed he appeared to be in a fair way of recovery; but falling asleep in his couch, he was seized with a shivering, which terminated in a fever and diarrhoea, that resisted all remedial means employed to abate them. Perceiving his end approaching, he exhibited another example of the ruling passion strong in death. The objects of his former care lay nearest his heart; and the fate of Europe seemed to render him insensible to his own. The Earl of Albemarle arriving from Holland, he conferred with him in private on the posture of affairs abroad; and having received the sacrament from Archbishop Tennison, he expired on Sunday the 8th of March, having lived fifty-two years, and reigned thirteen. William was in his person of the middle stature; his body was slender and his constitution delicate. He had an aquiline nose, sparkling eyes, a large forehead, and a grave solemn aspect. He left behind him the character of a great politician, though he had never been popular; and of an able general, though he had seldom been victorious. His deportment was grave, phlegmatic, and sullen; nor did he ever show any fire or animation except in the day of battle. On such occasions he was all life, gaiety, energy, and alacrity. At the last moment, when his mind was otherwise oppressed, he retained a just sense of religion, and seemed impressed with anxiety for the welfare of his subjects. He lay quietly and composed, with his eyes fixed upon heaven; and when his speech failed him, he appeared so resigned that no man could die either better prepared or with greater constancy and piety, than this prince, whose memory will ever be respected by the lovers of rational liberty.

CHAP. IX.

REIGN OF QUEEN ANNE.

Accession of Anne.—State of parties.—War declared against France.—Duke of Marlborough appointed general.—His success in his first Campaign.—Losses sustained at sea.—Gallantry and death of Admiral Benbow.—Continental army increased.—

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Further successes of Marlborough.—French defeated at Blenheim.—Gibraltar taken.—French defeated at sea.—Ineffectual attempt of the Spaniards to recover Gibraltar.—Charles declared king of Spain.—War of the Succession.—Barcelona taken.—French defeated at Ramillies.—The King of France sues for peace.—Change in the councils of Queen Anne.—English defeated at Almanza.—Shipwreck of Sir Cloudesley Shovel.—Union between Scotland and England.—The articles violently opposed in Scotland.—Effects of this measure.—Dissolution of the Scottish Privy Council.—French defeated at Oudenarde.—Battle of Malplaquet.—Last Campaign of Marlborough.—Forces Villars to quit his lines without striking a blow.—Capture of Bouchain.—Marlborough dismissed from all his employments.—Peace of Utrecht.—Attempt to dissolve the Union.—Intrigues of the Whigs and Tories.—Death of Queen Anne.

William was succeeded by the Princess Anne, who had married George, Prince of Denmark. She ascended the throne in the thirty-eighth year of her age, to the general satisfaction of all parties. William had died on the eve of a war with France; and the present queen, who was generally guided by the advice of her ministry on every important occasion, was now urged by opposite councils, one part of the ministry being inclined for war and another for peace. At the head of those who opposed a war with France was the Earl of Rochester, lord lieutenant of Ireland, first cousin to the queen, and the chief of the Tory faction; whilst the opposite party was led by the Earl, afterwards Duke, of Marlborough, and subsequently so much and justly renowned for his victories over the French. After both parties had given their opinions, that of Marlborough preponderated. The queen resolved to declare war; and having communicated her intentions to the House of Commons, by whom it was approved, war was proclaimed accordingly. In this declaration Louis was taxed with having taken possession of a great part of the Spanish dominions; with a design to invade the liberties of Europe, and to obstruct the freedom of navigation and commerce; with having offered an unpardonable insult to the queen and her throne, by acknowledging the title of the pretender; and with attempting to unite Spain to his own dominions, by placing his grandson upon the throne of that kingdom, and thus endeavouring to destroy the balance of power that subsisted among the states of Europe. This declaration of war on the part of England was seconded by similar manifestoes by the Dutch and Germans.

Louis XIV., whose power had been greatly circumscribed by William, expected, on the death of the latter, to enter on a field open for new conquests and fame. At the news of the English monarch's death, therefore, he could not suppress his satisfaction; whilst the people of Paris, and indeed throughout the whole kingdom, testified their joy in the most public manner. The French monarch was filled with indignation at seeing such a combination against him; but his resentment fell chiefly on the Dutch, and he declared with great emotion, that as for those gentlemen pedlars, they should one day repent their insolence and presumption in declaring war against him, whose power they had formerly felt and dreaded. By these threats, however, the affairs of the allies were no way influenced. Marlborough was appointed general of the British forces, and by the Dutch he was chosen generalissimo of the allied army; and indeed his subsequent conduct showed that no person could possibly have been chosen with greater propriety. He had learned the rudiments of war under Turenne, having served as a volunteer in his army; and that celebrated commander had prognosticated his future greatness.

The first attempt which Marlborough made to deviate from the general practice of the army was to advance the subaltern officers, whose merits had hitherto been neglected. Regardless of seniority, wherever he found ability

he was sure to promote it; and thus all the upper ranks of command were filled with men rather remarkable for their skill and talents than for their age and experience. In his first campaign, in the beginning of July 1702, he repaired to the camp at Nimeguen, where he found himself at the head of sixty thousand men, well provided with all necessaries, and long disciplined by the best officers of the age. He was opposed on the part of France by the Duke of Burgundy, a youth of very little experience in the art of war; but the real acting general was Marshal Boufflers, the second in command, an officer of courage and activity. But wherever Marlborough advanced, the French were obliged to retire before him, leaving all Spanish Guelderland at his discretion. The Duke of Burgundy, finding himself obliged to retreat before the allied army, rather than expose himself longer to such a mortifying indignity, returned to Versailles, leaving Boufflers to command alone. The latter then retired to Brabant; and Marlborough ended the campaign by taking the city of Liege, in which he found an immense sum of money and a great number of prisoners.

This good fortune seemed to console the nation for some unsuccessful expeditions at sea. Sir John Munden having permitted a French squadron of fourteen ships to escape him by taking shelter in the harbour of Corunna, was dismissed the service. An attempt was made upon Cadiz by sea and land, Sir George Rooke commanding the navy, and the Duke of Ormond the land forces; but this also miscarried. At Vigo, however, the British arms were attended with better success; and the French fleet which had taken refuge there were burned in order to prevent their falling into the hands of the English, whilst ten ships of war were taken, together with eleven galleons, and above a million of money in silver. In the West Indies, Admiral Benbow, who had been stationed with ten ships to distress the enemy's trade, having received information that Du Casse the French admiral was in those seas with a force equal to his own, resolved to attack him; and having discovered the enemy's squadron near St Martha steering along the shore, he quickly gave the necessary orders to his captains, and forming the line of battle, began the action. But the rest of the fleet having taken some causeless disgust at his conduct, permitted the admiral to sustain, almost alone, the whole fire of the enemy. Nevertheless, the engagement continued till night, and he determined to renew it next morning; but he had the mortification to perceive that all the rest of his ships had fallen back except one, who joined him in urging the pursuit of the enemy. During four days this intrepid seaman, assisted by only one ship, pursued and fought the enemy, whilst his dastardly officers remained at a secure distance. In the last day's battle, which was more furious than any of the preceding conflicts, the admiral's leg was shattered by a cannon-ball, and he himself died soon after of his wounds. Two of his associates were shot on their arrival in England; one died on his passage home; and the remainder were justly disgraced.

The next parliament, which was convened by the queen, evinced great satisfaction at the success of the British arms on the Continent. The House of Commons, composed chiefly of Tories, voted forty thousand seamen, and the like number of land forces, to act in conjunction with those of the allies. But soon afterwards the queen informed her parliament that she was pressed by the allies to augment her forces; and upon this it was resolved that ten thousand more men should be added to the continental army; on condition, however, that the Dutch should immediately break off all commerce with France and Spain.

In the beginning of April 1703 the Duke of Marlborough crossed the sea, and assembling the allied army,

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opened the campaign with the siege of Bonn, the residence of the Elector of Cologne, which held out but a short time. He next retook Huy, the garrison of which, after a vigorous defence, surrendered prisoners of war. Limburg was then besieged, and surrendered in two days; and the campaign concluded by securing the country of Liege, the electorate of Cologne, and the Lower Rhine, against the designs of the enemy.

In the campaign of 1704, the Duke of Marlborough, having informed the Dutch of his intention to march to the relief of the empire, which had been for some time oppressed by the French forces, the states gave him full powers to act as he thought proper, with assurances of assistance in all his efforts. The French king, finding Boufflers no longer capable of opposing Marlborough, appointed the Marshal de Villeroi to command in his room. But Marlborough, having no great fears from Villeroi, immediately marched to the assistance of the emperor. Taking with him about thirteen thousand British troops, he advanced by rapid marches to the banks of the Danube, defeated a body of French and Bavarians stationed at Donawerth to oppose him, and, passing the river, laid under contribution the electorate of Bavaria, which had taken part with the enemy. Villeroi, who at first had attempted to follow his motions, soon lost sight of him; nor was the French commander apprised of his route till informed of his successes. But, in the mean time, Marshal Tallard prepared by another line to obstruct Marlborough's retreat, with an army of thirty thousand men; and being soon after joined by the forces of the Elector of Bavaria, the French army in that part of the Continent amounted to sixty thousand veterans, commanded by two generals then reputed the best in France. To oppose this powerful force the Duke of Marlborough formed a junction with a body of thirty thousand men under the celebrated Prince Eugene; so that, with this reinforcement, the allied army amounted to about fifty-two thousand combatants. After various marches and countermarches, the two armies met at Blenheim. The French, under Tallard, were posted upon a hill near the town of Hochstet, having their right covered by the Danube and the village of Blenheim, their left by the village of Lutzingen, and their front by a rivulet, the sides of which were steep and the bottom marshy; and in this strong position they seemed to bid defiance to their adversaries. But Marlborough and Eugene, having carefully examined the ground, resolved to attack them, and accordingly advanced upon the plain in front of their position. The battle began by a cannonade on both sides, which lasted from nine in the morning until half an hour after mid-day. At this moment Marlborough, who had completed all his dispositions, crossed the rivulet at the head of the English, and attacked the cavalry of Tallard on the right, while that officer was engaged in reviewing his troops on the left. An hour elapsed, however, before Prince Eugene could bring up his forces to attack the other wing of the enemy commanded by the Elector of Bavaria; but, during this time, Marlborough's attack had been completely successful; and when Tallard repaired to the scene of action he found that the French cavalry had been thrice repulsed. He then attempted to lead to the charge a large body of troops which he had posted in the village; but these being furiously assailed by a strong detachment of English troops, were scarcely able to maintain their ground, while the French, taken in flank and in reverse, were totally defeated. This success led to a movement which proved completely decisive. Penetrating between the two wings of the French army, through the space left open by the defeat of the cavalry, the English troops effected a total separation between them, whilst the large force imprudently posted in the village of Blenheim had its commu-

nications intercepted by another strong detachment. In this situation Tallard flew to rally some of his squadrons; but, being short-sighted, he mistook a Hessian for a French corps, and was made prisoner. On the left Prince Eugene had encountered a vigorous resistance and been thrice repulsed; but, having received some reinforcements from Marlborough, he at last succeeded in dislodging the enemy opposed to him. The battle was now won. The French fled in the utmost confusion, whilst the corps of thirteen thousand men which occupied Blenheim were surrounded and made prisoners. About twelve thousand French and Bavarians were killed on the field or drowned in the Danube; whilst one hundred colours, two hundred standards, three thousand tents, all the baggage, and the military chest of the French army, formed the trophies of this glorious day. Of the allies not less than thirteen thousand were killed, wounded, or missing; but the conquerors by the victory gained a territory of a hundred leagues in extent, and inflicted a blow on the power of France from which it did not soon recover. Having finished the campaign, the duke repaired to Berlin, where he procured a reinforcement of eight thousand Prussians to serve under Prince Eugene in Italy, and then proceeded to negotiate for succours at the court of Hanover; after which he returned to England, and was received with every possible demonstration of joy. The manor of Woodstock was conferred upon him; and the lord-keeper, in the name of the Peers, honoured him with the praises which his talents and conduct had so well merited.

Nor were the arms of Britain less fortunate by sea than by land. The town of Gibraltar was taken by the Prince of Hesse and Sir George Rooke; but so little was the value of the conquest at that time understood, that it was for some time debated whether the admiral should be thanked for making it, and at last it was considered as unworthy of public gratitude. Soon after, the British fleet, to the number of fifty-three ships of the line, came up with that of France, consisting of fifty-two men of war, commanded by the Count de Toulouse, off the coast of Malaga. The battle began at ten in the forenoon, and continued with great fury for six hours, when the van of the French began to give way. The British admiral for two days attempted to renew the engagement; but this was cautiously declined by the French, who at last disappeared totally. Both sides claimed the victory, although the result showed that it was in favour of the British. Meanwhile the Spaniards, alarmed at the capture of Gibraltar, sent the Marquis of Villadurias with a large army to retake it. France also dispatched a fleet of thirteen ships of the line; but some of them parted company in a gale, and others were taken by the British. Nor was the land force more successful. The siege continued for four months, during which time the Spaniards repeatedly attempted in vain to scale the rock; and at last, losing all hopes of taking the place, they were contented to draw off their men and abandon the enterprise.

Whilst the British were thus victorious by land and sea, a new scene of contention was opened on the side of Spain. Philip V. grandson of Louis XIV. had been raised to the throne of that kingdom, having been nominated as successor to the crown by the late king of Spain's will. But in a former treaty among the powers of Europe, Charles, son of the emperor of Germany, was appointed heir to that crown; and this treaty had been guaranteed by France herself, although she now resolved to recal that consent in favour of a descendant of the house of Bourbon. Charles was still further led to urge his pretensions to the crown of Spain by the invitation of the Catalonians, who declared in his favour, and promised, with the assistance of the British and Portuguese, to arm in his cause.

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On his way to his new dominions, he landed in England, where, on his arrival, he was received by the Dukes of Somerset and Marlborough; kindly greeted by the queen; and furnished with two hundred transports, thirty ships of war, and nine thousand men, under the command of the Earl of Peterborough, a man of romantic bravery and high military genius. The first attempt of this general was on the city of Barcelona, at that time defended by a garrison of five thousand men. The fort of Monjuic, situated on a hill which commanded the city, was attacked; and the outworks being taken by storm, as well as the powder-magazine blown up, the fort surrendered, and in a short time afterwards the city capitulated. The conquest of all Valencia succeeded the capture of Barcelona; Charles became master of Aragon, Carthagen, Grenada, and Madrid; and the British general having entered the capital in triumph, there proclaimed Charles king of Spain, without opposition.

These successes, however, were soon eclipsed by the victories of the Duke of Marlborough, which alone engrossed public attention. In 1706 he opened the campaign with an army of eighty thousand men. The army of Villeroi, in the vicinity of Tirlémont, was of nearly equal strength, and he had orders to attack the allies before the Danish and Prussian contingents could join. But, whilst it was his intention to become the assailant, Villeroi was himself attacked, in a position which prevented his developing the whole of his force. He had the river Mehaigne on his flank, and his centre occupied the village of Ramillies, while a marsh covered his left. Marlborough skilfully availed himself of the disposition made by his antagonist; and knowing that Villeroi's left was paralysed by reason of the marsh in front, which effectually prevented its acting on the offensive, he directed his principal attack upon the centre, which formed the key of the position. The issue of the conflict was never for a moment doubtful; the village was carried in the most gallant style, and both wings being at once separated and turned, a complete rout ensued. About six thousand French were made prisoners, and upwards of eight thousand killed or wounded. The whole of Brabant became the reward of the victors. The French troops were now dispirited; the city of Paris was in confusion; and Louis, who had long been flattered with conquest, was humbled to such a degree as almost to excite the compassion even of his enemies. He sued for peace, but in vain; the allies carried all before them; and his capital began to dread the approach of the conquerors. But what neither his armies nor his politics could effect, was brought about by the intrigues of a party in England. The dissensions between the Whigs and Tories saved France, which now seemed tottering on the very brink of ruin.

The councils of the queen had hitherto been governed by a Whig ministry; for though the Duke of Marlborough began his career in the interest of the opposite party, he soon joined the Whigs, whom he found most sincere in the design of humbling France. The people, however, were now in fact beginning to change their sentiments, and to imbibe the slavish spirit of Toryism. The queen's personal virtues, her successes, her deference for the clergy, and their great veneration for her, all contributed to give her great influence with the nation. Persons of every rank were not ashamed to defend the most servile tenets, when these tended to flatter or increase the power of the sovereign, and to argue in favour of strict hereditary succession, divine right, and non-resistance to the regal power. The Tories, though joining in vigorous measures against France, were never very ardent enemies of that country; but they secretly hated the Dutch, and longed for an opportunity of breaking with that people. With this view

they began to meditate schemes of opposition to the Duke of Marlborough, whom they represented as an interested man, who sacrificed the real interests of the nation, in protracting a ruinous war, for his own private emolument and glory; and as the country was oppressed with a load of taxes, which a continuance of the war would inevitably increase, discontent began to spread, and the Tories wanted only a few determined leaders to assist them in removing the present ministry.

In the meanwhile, a succession of losses began to dissipate the conquering mania which had seized the nation, and to incline them to wish for peace. The Earl of Galway, who commanded the English army in Spain, was completely defeated at Almanza by the Duke of Berwick; and in consequence of this victory all Spain, except the province of Catalonia, returned to their duty to Philip as their lawful sovereign. An attempt was made upon Toulon by the Duke of Savoy and Prince Eugene by land, and an English fleet by sea; but to no purpose. The fleet under Sir Cloudesley Shovel, having set sail for England, was driven by a violent storm on the rocks of Scilly, where his own ship was lost, and every person on board perished; while three more ships met with the same fate, and four others were saved with the utmost difficulty. In Germany, Marshal Villars carried all before him, and was upon the point of restoring the Elector of Bavaria. The only hopes of the people lay in the activity and conduct of the Duke of Marlborough, who opened the campaign of 1707, about the middle of May; but even here they were disappointed. The duke declined an engagement; and, after a variety of marches and countermarches, both armies retired into winter quarters about the end of October. The French made vigorous preparations for the next campaign; and the duke returned to England to meet with a reception which he did not at all expect, and which he certainly did not deserve.

The most remarkable transaction of this year, and indeed of this whole reign, was the union between the two kingdoms of Scotland and England. Though governed by one sovereign since the time of James I. of England, yet each nation had continued to be ruled by its respective parliament, and often professed to pursue interests opposite to those of its neighbour. The union had often been unsuccessfully attempted before, and had indeed been the cause of the bloody wars in the times of Edward I. and Edward III. of England. In all the former proposals on that head, both nations were supposed to remain free and independent; each kingdom having its own parliament, and being subject only to such taxes and other commercial regulations as those parliaments judged expedient for the benefit of their respective states. But after the destruction of the Darien colony in the manner already related, King William had endeavoured to allay the national ferment by resuming the affair of a union with as much assiduity as his warlike occupations would allow. The terms proposed were the same with those formerly tendered; namely, a federal union, somewhat like that of the states of Holland. With this view the Scots were prevailed on to send twenty commissioners to London, who, with twenty-three on the part of England, assembled at Whitehall in the month of October 1702. Here they were honoured with a visit from the queen, in order to enliven their proceedings and stimulate them to the more speedy dispatch of business; but the treaty was entirely broken off at this time by the Scottish commissioners insisting that the rights and privileges of their countrymen trading to Africa and the Indies should be preserved and maintained. It was, however, resumed in the year 1706, when the commissioners again assembled on the 16th of April, in the council chamber of Whitehall. The Scottish commissioners

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still proposed a federal union; but the English were determined on an incorporation, which should not afterwards be dissolved by a Scottish parliament. Nothing but this, they said, could settle a perfect and lasting friendship betwixt the two nations. The commissioners from Scotland, however, continued to resist the article which subjected their country to the same customs, excises, and regulations of trade as England; but the queen being persuaded to pay two visits in person to the commissioners, exerted herself so vigorously, that a majority was at last gained over; and all the rest yielded, though with reluctance, excepting Lockhart of Carnwath, who could not by any means be persuaded either to sign or seal the treaty.

The articles being fully prepared on the 22d of July, were presented next day to her majesty by the lord-keeper in the name of the English commissioners; and at the same time a sealed copy of the instrument was delivered by the lord chancellor of Scotland. The articles were most graciously received; and the same day the queen dictated an order of council, threatening with prosecution such as should be concerned in any discourse or libel, or in laying wagers, with regard to the union. But notwithstanding all this harmony the treaty was received with the utmost disapprobation in Scotland. The terms had been carefully concealed, so that nothing transpired till the whole was at once laid before parliament. The ferment then became general; and all ranks of people, however divided in other respects, united against this detested treaty. The nobility and gentry were exasperated at the annihilation of parliament, and the consequent loss of their influence and credit. The body of the people cried out, that the independence of the nation was sacrificed to treachery and corruption; and insisted, that the obligations laid on their members to stay so long at London, in their attendance on the British parliament, would drain the country of its money, impoverish the members themselves, and subject them to the temptation of being corrupted. Nor was the commercial part of the people better satisfied. The dissolution of the India Company; the taxes laid on the necessaries of life; and the vast number of duties, customs, and restrictions, laid upon trade, were all of them matter of complaint. Before this time Scotland had traded freely to the Levant, the Baltic, France, Spain, Portugal, Holland, and the Dutch plantations; and it seemed difficult to conceive how the commerce of the country could be advanced by laying restrictions upon it in regard to these places, especially as the compensation allowed, namely, the privilege of trading to the English plantations in America, formed a very trifling advantage, seeing that the amount of the whole exports to these places did not by any means equal the expense of defending them. The most violent disputes took place in the parliament. Lord Belhaven delivered a most pathetic speech, in which, enumerating the miseries that would attend this treaty, he drew tears from the audience, and uttered many prognostications, which to this day are reckoned prophetic by many of the Scottish nation. Almost every article of the treaty was the subject of a protest; and addresses against it were presented to parliament by the convention of royal burghs, the commissioners of the general assembly, and the company trading to Africa and the Indies, as well as from shires, stewartries, burghs, towns, and parishes, without distinction of Whig, Tory, Presbyterian, or Episcopalian. Nor was the resentment of the common people without doors less violent than that of the members within. A coalition was formed between the Presbyterians and Cavaliers; and to such a height did the resentment of the people rise, that they actually chose officers, formed themselves into regiments, provided horses and ammunition, burnt the articles of union, justified their

conduct by a public declaration, and resolved to take the route to Edinburgh and dissolve the parliament.

In the mean time the privy council issued a proclamation against riots, commanding all persons to retire from the streets whenever the drum was beat; ordering the guards to fire on those who disobeyed this command; and indemnifying them from all prosecution for maiming or slaying the lieges. But even these precautions were insufficient. The Duke of Queensberry, the chief promoter of the union, though guarded by double lines of horse and foot, was obliged to pass through the streets at full gallop, amidst the curses and imprecations of the populace, who pelted his guards, and even wounded some of the persons who attended him in the coach. In opposition to all this fury, the friends of the measure magnified the advantages that would accrue to the kingdom from the union; they abated the resentment of the clergy, by promoting the insertion in the treaty of an act by which the Presbyterian discipline was declared to be the only government of the church of Scotland, unalterable in all succeeding times, and a fundamental article of the union. Emissaries were also employed to disunite the Camerons and the Cavaliers, by demonstrating the absurdity, sinfulness, and danger, of such a proceeding. The India Company was flattered with the prospect of an indemnification for the losses they had sustained, and individuals by sharing an equivalent. And the last manœuvre consisted in bringing over a party in the Scottish parliament, nicknamed the *Squadron Volante*, from their fluctuating between the ministry and the opposition, without attaching themselves to any party till the critical moment, which was either to cement both kingdoms by a firm union, or involve them in the calamities of war. By this unexpected stroke, the ministry obtained a decisive victory, and all opposition was henceforth vain. The articles of treaty were ratified by parliament, with some trifling variations, on the 25th of March 1707; when the Duke of Queensberry finally dissolved that ancient assembly, and Scotland ceased to be a separate independent kingdom.

On the conclusion of the treaty, the queen informed both houses of parliament that the treaty of union, with some additions and alterations, was ratified by an act of the parliament of Scotland; that she had ordered it to be laid before them, hoping it would meet their approbation; that they had now an opportunity of putting the last hand to a happy union of the two kingdoms; and that she would look upon it as a particular happiness if this great work, so often attempted before without success, could be brought to perfection in her reign. Objections, however, were started by the Tory party; but they were at that time too weak to be heard with any attention; and all their arguments were answered with such success by the opposite party, that the union was unalterably completed on the first of May 1707, and the island took the name of *The United Kingdom of Great Britain*.

In this treaty it must be observed, that the commissioners on the part of England were not only able statesmen, but, for the most part, well skilled in trade; which gave them an evident advantage over those of Scotland, who consisted of lords and gentlemen who had no commercial knowledge. Hence they were overmatched by the former in the great objects which are more immediately connected with national prosperity; though they were very careful to preserve all their heritable offices, superiorities, jurisdictions, and other privileges and trappings of the feudal aristocracy. Had the English commissioners made a liberal use of the advantages afforded them at this time, it would have been in their power to have greatly enriched themselves as well as the inhabitants of Scotland; but instead of this they were influenced by the narrow and

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short-sighted principle of commercial monopoly; and the consequences were such as might, with a small degree of reflection, have been foreseen.

In 1708 there was a warm debate in a grand committee of the House of Lords, occasioned by a bill passed by the Commons for rendering the union of the two kingdoms more entire and complete, by which it was enacted, that, from the first of May 1708, there should be but one privy council in the kingdom of Britain. The arguments for the dissolution of the privy council of Scotland were, its enormous stretches of power and acts of cruelty, and the circumstance that it could now be of no other use in Scotland except to enable the court to govern every thing at pleasure, and procure such members of parliament as it thought proper. The dissolution, however, was carried by fifty against forty, after which the nation, deprived of this last fragment of its ancient government, was thrown into a ferment by the opponents of the union; but after an ineffectual attempt in favour of the pretender, animosities began to subside.

We must now return to the Duke of Marlborough, who had gone over to Flanders to open the campaign. Peace had been more than once offered, and treaties entered upon, but as often frustrated. After the battle of Ramillies, the king of France had employed the Elector of Bavaria to write letters in his name to the Duke of Marlborough, containing proposals for opening a congress, and offering to renounce either Spain and its dominions, or the kingdoms of Naples and Sicily, to Charles of Austria, and to concede a barrier to the Dutch in the Netherlands. But these terms were rejected; and the two armies once more met in nearly equal numbers at Oudenarde, on the Scheldt, where an engagement ensued, in which the French were defeated with immense loss; and Lisle, the strongest town in Flanders, with Ghent, Bruges, and all the other towns in that country, soon after fell into the hands of the victors. In this battle the electoral prince of Hanover, afterwards George II. of Britain, greatly distinguished himself, and had the merit of conducting the first attack. His horse was killed under him, and Colonel Luschki was slain close by his side. The campaign ended with fixing a barrier to the Dutch provinces, and it now only remained to force a way into the provinces of the enemy.

The French king, being now in a manner reduced to despair, again sued for peace; but the demands of the allies were so high, that he was obliged to reject them, and prepare for another campaign, in the year 1709. The first attempt of the allies was against the city of Tournay, garrisoned by twelve thousand men, and exceedingly strong both by nature and art. After a terrible siege of twenty-one days, the town capitulated; and a month afterwards the citadel, which was still stronger than the town, surrendered. Next followed the bloody battle of Malplaquet, where the allied army, consisting of a hundred and ten thousand men, attacked the French, consisting of a hundred and twenty thousand, strongly posted, and fortified in such a manner behind the woods of La Merte and Tannières, with triple entrenchments, that their position seemed quite impregnable. Nothing, however, could resist the energy of Marlborough and the bravery of his troops. The French were driven from all their positions, and totally defeated. But the victory cost the allies very dear; for twenty thousand of their best troops lay dead or wounded on the field of battle. The consequence of this victory was the surrender of the city of Mons, which ended the campaign.

The last campaign of the Duke of Marlborough, which happened in the year 1711, probably excelled all his former exploits. He was opposed by Marshal Villars, who

had commanded the French in the battle of Malplaquet; but he contrived his measures so, that, by marching and countermarching, he, without striking a blow, forced the enemy to quit a strong line of entrenchments, which he afterwards took possession of. This enterprise was followed by the taking of Bouchain, which was the last military achievement of this great general. By a continuation of conduct and success almost unparalleled, he had gained to the allies a prodigious tract of country. From the beginning of the war, which had now continued nine years, he had perpetually advanced, and never retreated before his enemies, nor lost an advantage he had obtained over them. He frequently gained possession of the enemy's posts without fighting; and where he was obliged to attack, no fortifications were able to resist him. He had never besieged a city which he did not take, nor fought a battle which he did not win. Thus the allies had reduced under their command Spanish Guelderland, Limburg, Brabant, Flanders, and Hainault; they were masters of the Scarpe; the capture of Bouchain had opened for them a way into the very heart of France; and another campaign might have made them masters of Paris. But on the duke's return from this campaign, he was accused of having taken a bribe of six thousand pounds a year from a Jew who had contracted to supply the army with bread; and the queen thought proper to dismiss him from all his employments.

On the removal of this great general, the command of the British forces was conferred on the Duke of Ormond. The transactions which followed are by no means creditable to the character of the British nation. The people at large, blinded by a headstrong and furious clergy, wished to revive the ceremonies of the Romish religion, and to unite the English and Gallican churches; the general of the army acted a most insidious part, by giving the enemy intelligence of the designs of the allies before he had declared that he was not to act in concert with them; and the queen herself commanded him to pursue this shameful course, nay even acted in a similar manner herself. Prince Eugene complained much of the inactivity of the English general, though apparently unacquainted with his treachery; whilst the whole army loaded him with execrations, calling him a stupid tool, and a general of straw. All this, however, was in vain; the duke continued to prefer the commands of his sovereign to every other consideration, and Ormond lost what Marlborough had gained.

The disgrace of the Duke of Marlborough had been owing to the prevalence of the Tory party, who had now got the Whig ministry turned out; and the consequence was, that notwithstanding all the remonstrances and entreaties of the allies, the British army in Flanders was ordered not to act offensively. Hence the operations languished; a considerable body of the allies was cut off at Denain, and the French retook several towns. A peace, however, was at last concluded in 1713 between France and Britain. In this treaty it was stipulated that Philip, now acknowledged as king of Spain, should renounce all right to the crown of France, the union of two such powerful kingdoms being thought dangerous to the liberties of Europe. It was agreed that the Duke de Berri, Philip's brother, and next after him in succession, should also renounce his right to the crown of Spain in case he became king of France. And it was stipulated that the Duke of Savoy should possess the island of Sicily with the title of king, together with Fenestrelles, and other places on the Continent; and this increase of dominion was in some measure provided out of the spoils of the French monarchy. The Dutch had the barrier granted them which they so much desired; and if the crown of France was deprived of some dominions to enrich the Duke of Savoy, the house of Austria was also taxed to supply the wants of the Hollanders,

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who were put in possession of the strongest towns in Flanders. The fortifications of Dunkirk were demolished. Spain gave up Gibraltar and the island of Minorca. France resigned her pretensions to Hudson's Bay, Nova Scotia, and Newfoundland, but was left in possession of Cape Breton, with the liberty of drying fish upon the shore. Among the articles creditable to the British nation, their setting free the French Protestants confined in the prisons and galleys for their religion was not the least meritorious. In behalf of the emperor, it was stipulated that he should possess the kingdom of Naples, the duchy of Milan, and the Spanish Netherlands; and the king of Prussia was to have Upper Guelderland. A period was fixed for the emperor's acceding to these articles, as he had for some time obstinately refused to assist at the negociation. This famous treaty was signed at Utrecht on the last day of March 1713.

The same year was also remarkable for an attempt of the Scottish Peers and Commons to dissolve the union, which, as already stated, had proved exceedingly disagreeable and distressful to the nation. During the debates on this subject the Earl of Peterborough endeavoured to prove the impossibility of dissolving the treaty; but the Duke of Argyll, who had originally promoted the union, now declared against it, and said, that unless it were dissolved he did not long expect to have either property in Scotland or liberty in England. By some other Peers it was alleged, that the union had not produced its intended effect; that it had been designed to promote friendship between the two nations; that, so far from answering this purpose, the animosities between them were never so great as then; and that if separated again they would be better friends than in a state of nominal union and real dissension. This motion was however overruled; but the discontent of the people still continued; addresses were prepared throughout the kingdom; and matters were in danger of coming to the worst extremities, when the attempt of the pretender in 1715 so divided the minds of the people that no unanimous effort could ever afterwards be made for the repeal of the union.

The history of the latter portion of this reign consists entirely of the intrigues of the Whigs and Tories against each other, which, as they are now of no importance whatever, it is needless to take up time in relating, further than that the Tory influence continued to prevail. Whether the ministry at this time wished to alter the succession from the Hanoverian line, cannot now be clearly ascertained; but it is certain that the Whigs firmly believed it, and the Tories but faintly denied the charge. The suspicions of the former became every day stronger, particularly when they saw a total removal of the Whigs from all places of trust and confidence throughout the kingdom, and their employments bestowed on professed Tories, supposed to be devoted to the cause of unbroken hereditary succession.

The violent dissensions between these parties, with their cabals and tumults, made the queen's situation very disagreeable; her health visibly declined. On the 28th of July 1714 she fell into a lethargic insensibility; and, notwithstanding all the medicines prescribed by the physicians, the distemper gained ground so fast, that next day her life was despaired of. The members of the privy council were now summoned from the different parts of the kingdom, and began to provide for the security of the constitution. A letter was sent to the Elector of Hanover, informing him of the queen's desperate condition, and desiring him to repair to Holland, where a British squadron would attend to convey him to England; and instructions were at the same time dispatched to the Earl of Strafford at the Hague, to require the states-general to be prepared to guarantee the Protestant succession. Precautions were

also taken to secure all the sea-ports; and the command of the fleet was bestowed upon the Earl of Berkeley, a professed Whig. These measures answered a double purpose, as they argued the alacrity of the Whigs in the cause of their new sovereign, and seemed to imply that the state was in danger from the disaffection of the opposite party. On the 30th of July the queen seemed somewhat relieved by the medicines which had been administered; and having risen from her bed about eight in the morning, she walked a little; but she was soon afterwards seized with an apoplectic fit; and although she recovered somewhat by the assistance of Dr Mead, she continued all night in a state of stupefaction, and expired the following morning, at seven, having lived forty-nine years, and reigned upwards of twelve. This princess was remarkable neither for learning nor capacity. Like all the rest of her family, she seemed rather fitted for the duties of private life than those of a public station, being a pattern of conjugal fidelity, a good mother, a warm friend, and an indulgent mistress; and to her honour it should be recorded, that during her reign none suffered for treason on the scaffold. In her ended the line of the Stuarts, a family who neither rewarded their friends nor punished their enemies, and whose misconduct and misfortunes are scarcely to be paralleled in history.

CHAP. X.

REIGN OF GEORGE I.

Accession of George I.—His arrival in England.—Favour shown by him to the Whigs.—National Discontents.—Dissolution of Parliament.—New one assembled.—Its violent proceedings.—Rebellion in Scotland.—Battle of Sheriffmuir.—Proceedings of the Jacobites in England.—Expedition of the Earl of Derwentwater.—Jacobites forced to surrender at Preston.—Ridiculous schemes of the Pretender.—He lands in Scotland without means, and quits it without necessity.—Cruel treatment of the rebels.—Execution of Derwentwater and Kenmuir.—Escape of others by various means.—Duration of Parliaments extended.—Britain threatened with invasion by Charles XII. of Sweden.—Quadruple Alliance.—War with Spain.—Intended invasion by the Spaniards defeated.—Irish Parliament made dependent on that of Britain.—South Sea Scheme.—Origin and nature of this delusion.—The Directors punished.—Expedition of Admiral Hosiér.—Death of George I.

The queen had no sooner resigned her breath than the privy council met, and three instruments were produced, by which the Elector of Hanover appointed several of his adherents to be added as lords justices to the great officers of the kingdom. Orders were also issued out for proclaiming George, son of Ernest Augustus, Elector of Brunswick, and of Sophia, grand-daughter of James I., king of England, Scotland, and Ireland; and the regency appointed the Earl of Dorset to carry to him the intimation of his accession to the crown, and to attend him in his journey to England.

The king landed at Greenwich, and walked to his house in the park, accompanied by a great number of the nobility and other persons of distinction. George I. was fifty-four years of age when he ascended the British throne; and his mature age, his experience and sagacity, his numerous alliances, and the general tranquillity of Europe, all contributed to establish his interests, and promise him a peaceable and happy reign. His virtues, though not shining, were solid; and he was of a very different disposition from the Stuart family whom he succeeded; for, soon after his arrival in England, he was heard to say, "My maxim is, never to abandon my friends, to do justice to all the world, and to fear no man." To these qualities of resolution and perseverance he joined great application

Reign of George I. to business; but, unfortunately for England, he studied the interests of the territory he had left more than those of the kingdom he came to govern.

The new king early discovered a natural enough inclination to support those who had raised him to the throne, or, in other words, the Whig party. Immediately after his landing, he sent for such of the nobility as had distinguished themselves by their zeal for his succession. He expressed the greatest regard for the Duke of Marlborough, who had just then arrived from the Continent, whither he had been driven by the violence of the Tories; and he professed the same friendship for the other leaders of the Whigs, while the Tories found themselves excluded from the royal favour. The king did not seem sensible that the monarch of a faction rules but one half of his subjects; and it was his misfortune to be surrounded by men who, whilst they pretended to secure the crown for the king, used all their arts to confirm their own interests, extend their connections, and give laws to their sovereign. In consequence of these partialities, the greatest discontent was excited throughout the whole kingdom. The Tories or Jacobites raised terrible outcries; and had the pretender been a man of judgment or ability, a fair opportunity now offered him of striking a decisive blow. Instead of this, he remained a calm spectator on the Continent, and only sent over his emissaries to disperse ineffectual manifestoes and delude the unwary. At this time the Catholic religion was much hated in England; but the principles of the Dissenters were little, if at all, more agreeable to the generality. The Tories affirmed that, under a Whig administration, heresy and impiety were daily gaining ground; whilst the lower orders of the clergy joined in these complaints, and pointed out several tracts published in favour of Arianism and Socinianism. The ministry, however, not only refused to punish the delinquents, but silenced the clergy themselves, and forbade their future disputations on these topics.

The parliament having been dissolved, another was now called by a very extraordinary proclamation, in which the king complained of the evil designs of men disaffected to his succession, and of their misrepresentations of his conduct and principles; expressed his hopes that his subjects would send up to parliament the fittest persons to redress the present disorders; and entreated that they would elect such in particular as had expressed a firm attachment to the Protestant succession. In the election of this important parliament, uncommon vigour was exerted on both sides; but by dint of the monied interest which prevailed in corporations, and the activity of the ministry, a great majority of Whigs was returned both in England and Scotland. Upon the assembling of the new parliament the most violent measures were resolved on against the late ministry. A committee was appointed to inspect all the papers relative to the recent treaty, and to select such of them as might furnish grounds of accusation against the former ministry; and the Earl of Oxford was impeached of high treason, and sent to the Tower. Nor was the violence of the Commons answered with less vehemence without doors. Tumults became every day more frequent, and each new ebullition served only to increase the severity of the legislature, which at length passed an act, declaring, that if any persons to the number of twelve, unlawfully assembled, should continue together one hour after being required to disperse by a justice of peace or other officer, and after hearing the act against riots read in public, they should be deemed guilty of felony without benefit of clergy. These proceedings excited the indignation of the people, who perceived that the avenues of royal favour were closed against all but a faction; and a rebellion commenced in the sister kingdom,

where to other grievances was added that of the union, which all considered as an oppression. The malcontents of that country had all along maintained a correspondence with their friends in England, and some of the Tory party who were attached to the Protestant religion, and of moderate principles in government, began to associate with the Jacobites, and to wish in earnest for a revolution.

Scotland first showed them the example. The Earl of Mar, assembling three hundred of his vassals in the Highlands, proclaimed the pretender at Castleton, and setting up his standard at Braemar, assumed the title of Lieutenant-general of his Majesty's Forces. To second these attempts, two vessels arrived from France with arms, ammunition, and a number of officers, together with assurances, that the pretender himself would shortly come over to head his own forces. In consequence of this promise, the earl soon found himself at the head of ten thousand men well armed and provided; and having secured the pass of Tay at Perth, where his head-quarters were established, he made himself master of the province of Fife, and the whole sea-coast on that side of the Frith of Forth. He then marched to Dumblane, as if with the intention of crossing the Forth at Stirling Bridge; but there he was informed that the Duke of Argyll, who had been appointed commander-in-chief of all the forces in North Britain, was advancing against him from Stirling with his own clan, assisted by some troops from Ireland. Upon this he at first judged it proper to retreat; but being soon afterwards joined by reinforcements under the Earl of Seaforth, and General Gordon, an experienced officer, who had signalled himself in the Russian service, he resolved to face the enemy, and directed his march towards the south. The Duke of Argyll, apprised of his intentions, and anxious to prove his attachment to the present government, resolved to give him battle in the neighbourhood of Dumblane, though his forces did not amount to half the number of the enemy. Accordingly, in the morning he drew up his army, which did not exceed four thousand men, in order of battle; but he soon found himself greatly outflanked by the insurgents. The duke, therefore, perceiving the earl making attempts to surround him, was forced to alter his dispositions; but, from the scarcity of general officers, this was not done so expeditiously as to be completed before the insurgents began the attack. The left wing of the duke's army received the centre of the enemy, and supporting the first charge without shrinking, seemed for a time victorious. The chief of Clanronald was killed; but Glengarry, who was second in command, waving his bonnet and crying out "Revenge!" animated the rebel troops to such a degree, that they followed him close to the points of the enemy's bayonets, and got within their guard, when a total rout ensued of that wing of the royal army. General Witham, their commander, fled full speed to Stirling, and gave out that the rebels were completely victorious. But Argyll, who commanded in person on the right, having in the meanwhile attacked the left of the enemy, drove them before him for two miles, notwithstanding they often faced about and attempted to rally; and having entirely broken and driven them over the river Allan, he returned to the field of battle. Here, however, to his great mortification, he found the enemy victorious, and patiently waiting the attack. But instead of renewing the engagement, both armies continued to observe each other, neither caring to recommence the contest; and towards evening each drew off. Both sides of course claimed the victory; but all the advantages of success belonged to Argyll. He had arrested the progress of the enemy; and, in their circumstances, delay was defeat. In fact, the Earl of Mar soon found his losses and disappointments increase. The Castle of Inverness, of which he had obtain-

Reign of George I. ed possession, was delivered up by Lord Lovat, who had hitherto professed to act in the interest of the pretender; the Marquis of Tullibardine also forsook the earl, in order to defend his own part of the country; and many of the clans, seeing no likelihood of coming to a second engagement, returned quietly home.

Nor was the rebellion more successfully prosecuted in England. From the time the pretender had undertaken this wild project at Paris, in which the Duke of Ormond and Lord Bolingbroke were engaged, Lord Stair, the English ambassador there, had penetrated all his designs, and sent faithful accounts of all his measures and of all his adherents to the ministry at home. Upon the first rumour of an insurrection, therefore, several lords and gentlemen of whom they had suspicions were imprisoned; and although these precautions were insufficient to stop the insurrection in the western counties, where it had already begun, all the preparations of the insurgents were weak and ill conducted, while every measure was betrayed to government as soon as projected, and many revolts were repressed in the very outset.

But the insurrection in the northern counties attained to greater maturity. In the month of October 1715, the Earl of Derwentwater and Mr Forster took the field with a body of horse, and, being joined by some gentlemen from the borders of Scotland, proclaimed the pretender. Their first attempt was to seize upon Newcastle, in which they had many friends; but finding the gates shut against them, they retired to Hexham. To oppose them General Carpenter was detached by government with a body of nine hundred men; and an engagement was hourly expected. The rebels had two courses, by pursuing which they might have conducted themselves with prudence and safety. The one was, to march directly into the western parts of Scotland, and there join General Gordon, who commanded a strong body of Highlanders; and the other was, to cross the Tweed and boldly attack General Carpenter, whose forces did not exceed their own. But, from the infatuation attendant on the measures of the Jacobite party, neither of these courses was pursued. They took the route to Jedburgh, by which they hoped to elude Carpenter, and penetrate into England by the western border. But this was the most effectual means of cutting themselves off from either assistance or retreat. A party of Highlanders, who had by this time joined, at first refused to accompany them in so desperate an incursion, and one half of their number in consequence returned to their own country. At Brampton Mr Forster opened his commission of general, which had been sent him by the Earl of Mar, and there proclaimed the pretender. The insurgents then continued their march to Penrith, where a body of the militia, assembled to oppose them, fled at their approach. From Penrith they proceeded by the way of Kendal and Lancaster to Preston, of which they took possession without any kind of resistance. But this was the last stage of their ill-fated advance; for General Wills, at the head of seven thousand men, came up to attack them, and from his activity there was no escaping. They now, therefore, raised barricades about the town, put the place in a posture of defence, and repulsed with success the first attacks of the enemy's force. But next day Wills, reinforced by Carpenter, invested the town on all sides. In this deplorable situation Forster proposed to capitulate with the general; and accordingly sent Colonel Oxburgh, who had been taken prisoner, with a trumpet, to propose terms. Wills, however, refused to listen to such a proposition, alleging that he could not treat with rebels, and that the only favour they had to expect was to be spared from immediate slaughter. This was a hard condition; but as no better could be obtained, they laid down their

arms, and were put under a strong guard. All the noble-men and leaders were secured, and a few of their officers were tried for deserting from the king's army, and shot by order of a court-martial. The common men were imprisoned at Chester and Liverpool; whilst the noblemen and considerable officers were sent to London, and led through the streets pinioned and bound together, in order to intimidate their party in the metropolis.

But, however ill the schemes of the pretender may appear to have been conducted in Britain, they were still more so in France. Bolingbroke had been appointed his secretary at Paris, and Ormond his prime minister. But these statesmen quickly found that nothing could be done in favour of his cause. The king of France, who had ever warmly espoused the interest of the exiled family, was just dead; and the Duke of Orleans, who succeeded to the government of the kingdom, was averse to lend the pretender any assistance. His party, however, which was composed of the lowest and the most ignorant exiles from the British dominions, affected the utmost confidence, and boasted of a certainty of success. The deepest secrets of his cabinet, and all his intended measures, were bandied about in coffee-houses by persons of the lowest rank both in fortune and abilities; whilst subaltern officers aspired to be generals, and even prostitutes were intrusted with the management of his negotiations. From such instruments and such councils nothing could be augured but folly and disaster.

The pretender, in fact, might easily have seen that his affairs were desperate; yet, with his usual infatuation, he resolved to hazard his person among his friends in Scotland, at a time when such a measure was too late to serve any rational purpose. Accordingly, travelling through France in disguise, and embarking in a small vessel at Dunkirk, he arrived, after a short voyage, on the coast of Scotland, with only six gentlemen in his train. He passed unknown through Aberdeen to Fetteresso, where he was met by the Earl of Mar, with about thirty noblemen and gentlemen of the first quality, and solemnly proclaimed; and his declaration, dated at Comerey, was printed and dispersed. He then proceeded to Dundee, where he made a public entry; and in two days more he arrived at Seone, where he intended to have the ceremony of his coronation performed. He ordered thanksgivings to be offered for his safe arrival; he enjoined the ministers to pray for him in their churches; and, without the smallest share of power, he enacted all the ceremonial of royalty, which served to throw an air of ridicule upon his pretensions. Having thus spent valuable time in useless parade, he next abandoned the enterprise with the same levity with which it was undertaken. He made a speech to his grand council, in which he informed them of his want of the money, arms, and ammunition necessary for undertaking a campaign; and deploring the necessity he was under of leaving them, he once more embarked on board a small French ship that lay in the harbour of Montrose, accompanied with several lords, his adherents, and in five days arrived at Gravelines.

The rebellion being thus ended, the law was put in force in all its rigour; and the prisons of London were crowded with deluded persons, whom the ministry seemed resolved not to pardon. The Commons, in their address to the crown, declared they would prosecute, in the most rigorous manner, the authors of the late rebellion; and their measures were as vindictive as their resolutions were speedy. The Earls of Derwentwater, Nithsdale, Carnwath, and Wintoun, the Lords Widrington, Kenmuir, and Nairne, were impeached; and, upon pleading guilty, all except Lord Wintoun received sentence of death. No entreaties could prevail on the ministry to spare these un-

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happy men. The House of Lords even presented an address to the throne for mercy, but without effect; the king only answered, that on this, as on all other occasions, he would act in the manner which he thought most consistent with the dignity of the crown and the safety of the people. Orders were accordingly issued for the execution of the Lords Derwentwater, Nithsdale, and Kenmuir, immediately: the rest were respited. Nithsdale, however, had the good fortune to escape in woman's clothes, which were brought him by his mother on the eve of the day fixed for his execution. Derwentwater and Kenmuir were brought at the time appointed to the scaffold on Tower Hill, where both underwent the sentence of the law with calm intrepidity, and apparently less moved than those who witnessed their execution.

An act of parliament was next passed for trying the private persons in London, and not in Lancashire, where they had been taken in arms. This was considered, by some of the best lawyers, as an alteration of the ancient constitution of the kingdom, according to which it used to be held, that every prisoner should be tried in the place where the offence charged against him had been committed. In the beginning of April, commissioners for trying the rebels met in the Court of Common Pleas, when true bills were found against Forster, brigadier Mackintosh, and twenty of their associates. Forster escaped from Newgate, and reached the Continent in safety; the rest pleaded not guilty to the charge. Pitts, the keeper of Newgate, having been suspected of conniving at Forster's escape, was tried for his life, but acquitted. Mackintosh and several other prisoners subsequently broke from Newgate, having mastered the keeper and turnkey, and disarmed the sentinel. The court then proceeded to the trial of the remainder, and four or five were hanged, drawn, and quartered, at Tyburn. The judges appointed to try the rebels at Liverpool found a considerable number of them guilty of high treason; twenty-two were executed at Manchester and Preston; while about a thousand experienced the king's mercy, and were transported to the plantations.

The rebellion being thus extinguished, the danger of the state was made a pretence for continuing the parliament beyond the term fixed for its dissolution. An act was therefore passed, repealing that which provided for the triennial dissolution of parliaments, and the term of their duration was extended to seven years. This attempt in a delegated body to increase their own power by extending it, is contrary to the first principles of justice. If it was right to extend their duration to seven years, they might also perpetuate their authority, and thus cut off even the shadow of representation. The bill, however, passed both houses, and all objections to it were considered as disaffection. The people might murmur at this encroachment, but it was too late for redress.

Domestic concerns being thus adjusted, the king resolved upon a voyage to the Continent. He foresaw a storm gathering from Sweden. Charles XII. highly provoked at his having entered into a confederacy with the Russians and Danes during his absence at Bender, and purchased from the king of Denmark the towns of Bremen and Verden, which constituted part of his dominions, maintained a close correspondence with the dissatisfied subjects of Great Britain; and a scheme was formed for landing a considerable body of Swedish forces, with the king at their head, in some part of the island, where it was expected they would be joined by all the malcontents in the kingdom. Count Gyllenburg, the Swedish minister in London, was peculiarly active in the affair; but having been seized, with all his papers, by order of the king, the confederacy was for the time broken up. A bill

was, however, passed by the Commons, prohibiting all commerce with Sweden, although the trade with that country was at the time of the utmost consequence to the English merchants. George having passed through Holland to Hanover, in order to secure his German dominions, entered into a new treaty with the Dutch and the Regent of France, by which they agreed mutually to assist each other in case of invasion; and, for his further security, the Commons granted him £250,000. But the death of the Swedish monarch, who was soon afterwards killed at the siege of Fredericsthal in Norway, put an end to all disquietude from that quarter.

Among the many treaties for which this reign was remarkable, one had been concluded, called the Quadruple Alliance, in which it was agreed between the emperor, France, Holland, and Britain, that the emperor should renounce all pretensions to the crown of Spain, and exchange Sardinia for Sicily with the Duke of Savoy; and that the succession to the duchies of Tuscany, Parma, and Placentia, should be settled on the queen of Spain's eldest son, in case the present possessors should die without male issue. This treaty, however, was by no means agreeable to the king of Spain; and it became prejudicial to the English, as it had the effect of interrupting the commerce with that kingdom. A war soon afterwards commenced between Spain and the emperor, who was considered as the principal contriver of the treaty; and a numerous body of Spanish forces were sent into Italy to support Philip's pretensions in that quarter. The regent of France attempted in vain to dissuade him, and the king of Britain offered his mediation with as little success, their interposition being considered as partial and unjust. A Spanish war was then resolved on, and a squadron of twenty-two ships equipped with all expedition. The command was given to Sir George Byng, who had orders to sail for Naples, which was at that time threatened by a Spanish army. He was received with the greatest joy by the Neapolitans, who informed him that the Spaniards, to the amount of thirty thousand, had then actually landed in Sicily. In this exigency, and whilst no assistance could be afforded by land, he resolved to proceed thither by sea, fully determined to pursue the Spanish fleet, on board of which the army was embarked. Upon coming round Cape Faro, he perceived two small Spanish vessels, and pursuing them closely, came upon their main fleet, which, before noon, he discovered in line of battle, amounting in all to twenty-seven sail. The Spaniards, however, notwithstanding their superiority of number, attempted to sheer off; but finding it impossible to escape, they kept up a running fight, the commanders behaving with great courage and activity, notwithstanding which they were all taken except three, which were saved by the conduct of their vice-admiral, a native of Ireland.

The rupture with Spain was thought favourable to the interest of the pretender; and it was hoped that, by the assistance of Cardinal Alberoni, a new insurrection might be excited in England. The Duke of Ormond was the person fixed upon to conduct this expedition; and he obtained from the Spanish court a fleet of ten ships of war and transports, having on board six thousand regular troops, with arms for twelve thousand more. But fortune was still as unfavourable as ever to the cause of legitimacy. Having set sail, and proceeded as far as Cape Finisterre, he encountered a violent storm, which disabled his fleet, and frustrated the expedition. This misfortune, together with the bad success of the Spanish arms in Sicily and other parts of Europe, induced Philip to agree to a cessation of arms; and at last he consented to sign the quadruple alliance, by which means peace was again restored to Europe.

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Tranquillity being thus established, the ministry proceeded to take measures for securing the dependence of the Irish parliament upon that of England. One Maurice Annesley having appealed to the House of Peers of England from a judgment of the Irish Peers, the decree of the latter was reversed, and the British Peers ordered the Barons of Exchequer in Ireland to put Mr Annesley in possession of the lands which he had lost by the decree of the Lords in that kingdom. The Barons obeyed this order; but the Irish Peers passed a vote against them, as having attempted to diminish the just privileges of the parliament of Ireland, and at the same time ordered the barons to be taken into custody by the usher of the black rod. On the other hand, the House of Lords in England resolved that the Barons of Exchequer in Ireland had acted with courage and fidelity; and addressed the king to signify his approbation of their conduct by some marks of his favour; while, to complete their object, a bill was prepared by which the Irish House of Lords was deprived of all right of final jurisdiction. This bill was opposed in both houses, but particularly in the Commons, where it was asserted by Mr Pitt that it would only serve to increase the power of the English Peers, who were already but too formidable. Mr Hungerford also demonstrated that the Irish Lords had always exercised the power of finally deciding causes; but, in spite of all opposition, it was carried by a great majority, and soon afterwards received the royal assent.

This blow was severely felt by the Irish, but it was by no means so great as that which the English about this time received from the South Sea Scheme, which commenced in the year 1721. To understand the genesis of this delusion, it is necessary to observe, that ever since the Revolution, owing either to the insufficiency of the supplies granted by parliament, or to the time required for collecting those which were actually granted, the government was obliged to borrow money from several different companies of merchants; and among the rest from that which traded to the South Seas. In the year 1716 the government were indebted to this company upwards of nine millions sterling, for which interest at the rate of six per cent. was agreed to be paid. But as this company was not the only creditor of the government, Sir Robert Walpole formed a design of lessening the national debt, by giving the several associations which had advanced funds for the public service an alternative of either accepting a lower rate of interest, namely five per cent., or of being paid the principal. In point of fact, the different companies chose rather to accept of the reduced rate of interest than to be paid the principal; and the South Sea Company in particular, having advanced loans to the extent of ten millions, were contented to take £500,000 annually as interest, instead of £600,000, which they previously received. And in the same manner, the governors and company of the Bank, and other associations, consented to receive a diminished interest for their respective loans, which of course lessened considerably the burdens of the nation.

In this situation of things, one Blount, a scrivener, proposed to the ministry, in the name of the South Sea Company, to buy up all the debts of the different associations, in order that the South Sea Company might become the sole creditors of the state. The terms he offered to government were extremely advantageous. The South Sea Company was to redeem the debts of the nation out of the hands of the private individuals who were creditors to the government, upon such terms as could be agreed on; and for the interest of the money thus redeemed and taken into their own hands, they were to be allowed by government five per cent. for six years; after which the interest was to be reduced to four per cent. and to be at any time redeemable by parliament. For these purposes, accord-

ingly, a bill passed both houses of parliament. But now came the part of the scheme which was big with fraud and ruin. As the directors of the South Sea Company could not of themselves be supposed to possess money sufficient to buy up the debts of the nation, they were empowered to raise it by opening a subscription to an imaginary scheme for trading in the South Seas; and as immense advantages were promised from this supposititious commerce, and still greater expected by the rapacious credulity of the people, all the creditors of government were invited to come in and exchange their securities for that of the South Sea Company. The directors' books were accordingly no sooner opened for the first subscription, than crowds came to effect the exchange of government for South Sea stock; and the delusion was artfully propagated and continued. In a few days subscriptions or shares sold for double the price at which they had been purchased; the scheme succeeded beyond even the projector's hopes; and the whole nation was infected with a spirit of avaricious enterprise. The infatuation, in fact, became epidemic, and the stock rose to a surprising degree, even to a thousand per cent. premium on the original value or price of the shares. But after a few months the people awaked from their dream of riches, and found that all the advantages which they expected were purely visionary, whilst thousands of families were involved in utter ruin. Many of the directors, by whose arts the people had been taught to expect such benefits from a traffic to the South Seas, had indeed amassed enormous fortunes in consequence of the credulity of the public; but it was some consolation to the people, to find that the parliament, sharing in the general indignation, had resolved to strip these plunderers of their ill-gotten wealth. Accordingly, orders were first given to remove all the directors of the South Sea Company from their seats in parliament, and the places they held under government; and the principal delinquents were punished by a forfeiture of all such possessions and estates as they had acquired during the continuance of the popular frenzy. The next care of parliament was to afford some relief to the sufferers. Several just and proper resolutions were in consequence adopted, and a bill was speedily prepared for alleviating the sufferings of the people as far as the power of the legislature in such a case could possibly extend. Out of the profits arising from the South Sea scheme, the sum of seven millions was restored to the original proprietors; several additions were also made to their dividends out of what was possessed by the company in their own right; and the remaining capital stock was also divided among the former proprietors at the rate of thirty-three per cent. Petitions from all parts of the kingdom were in the meanwhile presented to the house, demanding justice; and the whole nation seemed exasperated to the highest degree. Public credit sustained a terrible shock. Some leading members of the administration were deeply implicated in these fraudulent transactions. A run was made upon the bank; and nothing was heard but the ravings of disappointment and the cries of despair.

By degrees, however, the effects of this terrible calamity wore off, and matters returned to their former condition. A new war with Spain, however, commenced in 1726. Admiral Hosier was sent to South America to intercept the Spanish galleons; but the Spaniards, apprised of his design, relanded their treasure, and thus defeated the object of the expedition. Meanwhile the greater part of the British fleet sent on this service was rendered entirely unfit for service. The seamen were cut off in vast numbers by the malignity of the climate and the length of the voyage, whilst the admiral himself died, it is said, of a broken heart. By way of retaliation the Spaniards undertook the siege of Gibraltar; but they soon found that this at-

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Soon after the dissolution of the parliament in the year 1727, the king, resolving to visit his electoral dominions of Hanover, appointed a regency to govern in his absence, and, embarking for Holland, landed at a little town called Voet. Next day he proceeded on his journey; and in two days more, betwixt ten and eleven at night, he arrived at Delden, to all appearance in perfect health. He supped there very heartily, and continued his journey early the next morning; but betwixt eight and nine he ordered his coach to stop; and it being perceived that one of his hands lay motionless, Fabrice, who had formerly been servant to the king of Sweden, and now attended King George in the same capacity, attempted to quicken the circulation by chafing the royal hand between his own. As this had no effect, however, the surgeon who followed on horseback was called, and rubbed it with spirits. But the friction was unavailing; the king's tongue began to swell, and he had just strength enough to bid them hasten to Osnaburgh; after which he fell insensible into Fabrice's arms. He never recovered; but expired about eleven o'clock the next morning, in the sixty-eighth year of his age and thirtieth of his reign. His body was conveyed to Hanover, and interred among his electoral ancestors.

CHAP. XI.

REIGN OF GEORGE II.

Accession of George II.—Court and Country Parties.—Charitable Corporation.—Excise Scheme rejected.—Parliament dissolved.—War with Spain.—Capture of Puerto Bello.—Anson's Expedition.—Unsuccessful attempt on Carthage.—Retirement of Sir Robert Walpole.—Army sent into Flanders.—Origin of the Continental War.—Desperate situation of the Queen of Hungary.—Relieved by the British forces.—Battle of Dettingen.—Intended invasion of Britain by France.—Battle of Fontenoy.—Capture of Louisbourg.—Landing of the Pretender in Scotland.—Battle of Gladsuir.—Advance into England.—Consternation in London.—Retreat of the Highland army from Derby.—Siege of Stirling Castle.—Battle of Falkirk.—Advance of the Duke of Cumberland, and retreat of the Rebels.—Battle of Culloden.—Cruelty of Cumberland.—Subsequent adventures and escape of Prince Charles Edward.—Execution of Rebels.—Policy of the Government in regard to the Highlands of Scotland.—Allies defeated in Flanders.—Losses sustained by the French in other parts.—Peace of Aix-la-Chapelle.—Death of the Prince of Wales.—Hostilities renewed.—Minorca invaded.—Execution of Admiral Byng.—Treaty with Russia.—Opposition of the King of Prussia.—New Combination of the European powers.—Unsuccessful expedition against France.—Accession of Mr Pitt to office.—Success of the British arms in both hemispheres.—Quebec taken and Canada reduced.—Misconduct of Cumberland in Germany.—Capitulation of Closter Seven.—French defeated at Minden.—German war continued with various success.—Death of George II.

On the accession of George II. who succeeded to his father in the forty-fourth year of his age, the two great parties into which the nation had so long been divided again changed their names, and were now called the Court and Country Parties. Throughout the greatest part of this reign there seem to have been two objects of controversy, which rose up in debate every session, and tried the strength of the opponents; namely, the national debt, and the number of forces to be kept in pay. The government, on the present king's accession, owed more than thirty millions of money; and although there was a long continuance of profound peace, yet this sum went on constantly increasing. How this could happen was much

Reign of George II. wondered at by the country party, and it was as constantly the business of the court to give plausible reasons for the increase. Hence demands for new supplies were made every session of parliament, for the purpose of securing friends upon the Continent, of guarding the kingdom from internal conspiracies, or of enabling the ministry to act vigorously in conjunction with the powers in alliance abroad. It was vainly alleged that these expences were incurred without foresight or necessity; and that the increase of the national debt, by multiplying and increasing taxes, would at last become an intolerable burden to the poor. These arguments were offered, canvassed, rejected; the court party was constantly victorious, and every demand was granted with equal cheerfulness and profusion.

The next thing worthy of notice in the reign of George II. is the Charitable Corporation. A society of men had united themselves into a company under this name, with the professed intention of lending money at legal interest to the poor upon small pledges, and to persons of higher rank upon proper security. Their capital was at first limited to thirty thousand pounds; but they afterwards increased it to six hundred thousand. This money was supplied by subscription, and the care of conducting the capital was intrusted to a proper number of directors. The company having continued in existence for more than twenty years, the cashier, George Robinson, member for Marlow, and the warehouse-keeper, John Thomson, disappeared in one day; and five hundred thousand pounds of capital were found to be sunk or embezzled by means which the proprietors could not discover. In a petition to the House, therefore, they represented the manner in which they had been defrauded, and the distress to which many of them had in consequence been reduced; and a secret committee having been appointed to examine into this grievance, a most iniquitous scene of fraud was discovered, which had been carried on by Thompson and Robinson, in concert with some of the directors, for embezzling the capital and cheating the proprietors. Many persons of rank and quality were concerned in this infamous confederacy; and even some of the first characters in the nation did not escape censure. No less than six members of parliament were expelled for the most sordid acts of knavery; Sir Robert Sutton, Sir Archibald Grant, and George Robinson, for their frauds in the management of the Charitable Corporation scheme; Dennis Bond and Serjeant Burch, for a fraudulent sale of the unfortunate Earl of Derwentwater's estate; and John Ward of Hackney, for the crime of forgery. It was at this time asserted in the House of Lords that not one shilling of the forfeited estates had ever been applied to the service of the public, but had become the reward of fraud, venality, and profligacy.

This happened in the year 1731. In 1732 a scheme was formed by Sir Robert Walpole of fixing a general excise; and he introduced it by enumerating the frauds practised by the factors in London employed in selling the American tobacco. To prevent these frauds, he proposed, that instead of having the customs levied in the usual manner, all the tobacco to be hereafter imported should be lodged in warehouses appointed for that purpose by the officers of the crown; and should from thence be sold, upon paying the duty of fourpence a pound, whenever the proprietor found a purchaser. This proposal raised a violent ferment, both within and without doors; and at last the fury of the people was worked up to such a pitch, that the parliament-house was surrounded by multitudes, who intimidated the ministry, and compelled them to abandon the scheme. The miscarriage of the bill was celebrated with public rejoicings in London and Westminster, and the minister was burned in effigy by the populace of London.

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But the same disputes were carried on in this as in the former parliament. New subjects of controversy offered every day, and both sides were eager to seize them. A convention agreed on by the ministry with Spain became an object of warm altercation. By this the court of Spain had agreed to pay ninety-five thousand pounds to the English, as a satisfaction for all demands, and to discharge the whole in four months from the day of ratification; but this stipulation was considered as not containing an equivalent for the damages which had been sustained, and which were said to amount to three hundred and forty thousand pounds. A violent discussion ensued, in the course of which the minister was provoked into unusual vehemence, and branded the opposite party with the appellation of traitors. But he was, as usual, victorious; and the country party finding themselves out-numbered and out-voted in every debate, resolved to withdraw for ever; while Walpole, thus left without opposition, took the opportunity of passing several useful laws in their absence, in order to render his opponents odious or contemptible to the country.

In 1739 a new war commenced with Spain. Ever since the treaty of Utrecht, the Spaniards in America had insulted and distressed the commerce of Great Britain; whilst the British merchants, on the other hand, had endeavoured to carry on an illicit trade with their dominions. As a right of cutting logwood in the Bay of Campeachy, claimed by the British, gave them frequent opportunities of introducing contraband commodities into the continent, the Spaniards resolved to put a stop to the evil by refusing liberty to cut logwood in that place. The guarda-costas exercised great severities, and many British subjects were sent to the mines of Potosi. One remonstrance followed another to the court of Madrid; but the only answers given were promises of inquiry, which produced no reformation. Accordingly, in 1739 war was declared with all proper solemnity; and soon after Admiral Vernon, with only six ships, destroyed all the fortifications of Puerto Bello, and came away victorious, with scarcely the loss of a man.

As the war was thus successfully begun, supplies were cheerfully granted to prosecute it with all imaginable vigour. Commodore Anson was sent with a squadron of ships to distress the enemy in the South Seas, and to co-operate occasionally with Admiral Vernon across the Isthmus of Darien. This squadron was designed to act a part subordinate to a formidable armament which was to be sent against Mexico or New Spain; but through the mismanagement of the ministry both these schemes were frustrated. Anson was detained till too late in the season, when he set out with five ships of the line, a frigate, two store-ships, and about fourteen hundred men. But having entered the South Sea at the most unfavourable period of the year, he encountered terrible storms; his fleet was dispersed, and his crew deplorably afflicted with scurvy, so that with the utmost difficulty he reached the island of Juan Fernandez. Here, however, he was joined by one ship and a frigate of seventeen guns, and sailing from thence along the coast of Chili, he plundered and burnt the town of Paita. He next traversed the Pacific, in hopes of meeting with one of the rich galleons which traded from the Philippine Islands to Mexico. Having refreshed his men at the island of Tinian,

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Another expedition which was fitted out ended still more unfortunately. The armament consisted of twenty-nine sail of the line, and an almost equal number of frigates, furnished with all kinds of warlike stores, near fifteen thousand seamen, and as many land forces. The most sanguine hopes of success were entertained; but the ministry detained the fleet without any visible reason till the season for action in America was nearly past. At last, however, the squadron arrived before Carthagena, and soon captured the strong forts which defended the harbour. But though by this means they were enabled to approach nearer the town, they still found great difficulties before them. From an erroneous belief that the ships could not get near enough to batter the town, and that therefore the remaining forts must be attempted by escalade, this dangerous experiment was tried; but the guides were slain by the enemy's fire, and the forces, mistaking their way, instead of attempting the weakest part of the fort, attacked the strongest, where they were exposed to the fire of the whole town. Their scaling ladders were also too short; and at last, after sustaining a dreadful fire with great resolution for some hours, they retreated, leaving six hundred men dead on the spot. The ravages of the climate now began to prove more dreadful than the casualties of war; and the rainy season commenced with such violence, that it was found impossible for the troops to continue in their encampment. And, as if to aggravate these calamities, dissension arose between the commanders of the sea and land forces, who blamed each other, and at last could only be brought to agree in one mortifying measure, namely, the re-embarkation of the troops.

The miscarriage of this enterprise produced the greatest discontents, more especially as other causes of complaint occurred at the same time. Sir John Norris had twice sailed to the coast of Spain at the head of a powerful squadron, without effecting any thing of consequence. The commerce of Britain was greatly annoyed by the Spanish privateers, who had taken upwards of four hundred ships since the commencement of the war; whilst the British fleets remained quite inactive, and suffered one loss after another, without endeavouring in the least to make proper reprisals. These discontents burst out all at once against Sir Robert Walpole; a majority was formed in the House of Commons in opposition to the ministry of which he was the head; he was created Earl of Orford; and the parliament having adjourned for a few days on purpose, he resigned all his employments.

The removal of this minister gave universal satisfaction. His antagonists entertained great hopes of seeing him punished; but he had laid his schemes too well to be under any apprehensions on that account; and, in fact, the new ministry had no sooner got into office than they trode in the footsteps of those whom they had so much exclaimed against. The nation had now become disgusted with naval operations. The people desired a renewal of their victories in Flanders, and the king ardently joined in the same wish. An army of sixteen thousand men was therefore shipped and sent to Flanders, to take part in the quarrels that were then beginning to break out on the Continent. Immense triumphs were expected from this undertaking; but it was somehow forgotten that the army was not now commanded by John Duke of Marlborough.

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In order to give some notion of the origin of these continental disputes, it is necessary to go back for several years. After the Duke of Orleans, regent of France, died, Cardinal Fleury undertook to settle the confusion in which the kingdom was then involved; and under him France repaired her losses, and enriched herself by means of commerce. During the long interval of peace which this minister's counsels had procured for Europe, two powers, hitherto disregarded, began to attract the notice and the jealousy of the neighbouring nations. These were Russia and Prussia, both of which had been gradually rising into power and consequence. The other states were but little prepared to renew the war. The empire remained under the government of Charles VI. who had been placed on the throne by the treaty of Utrecht; Sweden continued to languish, from the destructive projects of Charles XII.; Denmark was powerful enough, but inclined to peace; and part of Italy still remained subject to those princes who had been imposed upon it in consequence of foreign treaties. All these states, however, continued to enjoy profound peace, until the death of Augustus king of Poland; an event by which a general flame was once more kindled in Europe. The emperor, assisted by the arms of Russia, declared for the elector of Saxony, the son of the deceased king; whilst France, on the other hand, espoused the cause of Stanislaus, who had long ago been nominated king of the Poles by Charles of Sweden, and whose daughter the king of France had since married. Stanislaus was gladly received at Dantzic, and acknowledged as king of Poland; but having been besieged there by ten thousand Russians, the city was taken, and he himself with difficulty made his escape. France, however, still resolved to assist him, as the most effectual method of distressing the house of Austria; and her views were seconded by Spain and Sardinia, both of which hoped to be enriched by the spoils of Austria. A French army, therefore, overran the empire, under the conduct of the old Marshal Villars; whilst the Duke of Montemar, the Spanish general, was equally victorious in the kingdom of Naples. The emperor was soon obliged to sue for peace, which was granted; but Stanislaus was neglected in the treaty, it having been stipulated that he should renounce all claim to the kingdom of Poland; while the emperor gratified France with the duchy of Lorraine, and other valuable territories, as an indemnification.

The emperor dying in the year 1740, the French thought the opportunity favourable for their ambition, and, regardless of treaties, particularly that called the Pragmatic Sanction, by which the late emperor's dominions were settled upon his daughter, caused the Elector of Bavaria to be crowned emperor. Thus the queen of Hungary, daughter of Charles VI. was at once stripped of her inheritance, and left for a whole year without any hopes of success; and at the same time she lost the province of Silesia by an irruption of the young king of Prussia, who took the opportunity of her defenceless condition to renew his pretensions to that province. France, Saxony, and Bavaria, attacked the rest of her dominions; and Britain was the only ally who seemed willing to assist her; but Sardinia, Holland, and Russia, soon afterwards concurred in the same views. It must be owned that the only reason which Britain had for interfering in these disputes was, that the security of the electorate depended upon nicely balancing the different interests of the empire; but the ministry were nevertheless willing to gratify the king by engaging the country in a war. His majesty informed the parliament that he had sent a body of British forces into the Netherlands, which he had augmented by sixteen thousand Hanoverians, to operate a diversion on the side of France, in favour of the queen of Hungary. But when the supplies by which this additional number of Hanoverian troops was to

receive pay from Britain for defending their own cause came to be considered, violent parliamentary debates ensued; and although the ministry carried their point by the strength of numbers, they had but little reason to boast of their victory.

Yet, however prejudicial these continental measures might be to the true interests of Great Britain, they effectually retrieved the queen of Hungary's affairs, and soon turned the scale of victory in her favour. The French were driven out of Bohemia; while her general, Prince Charles of Lorraine, at the head of a large army, invaded the dominions of Bavaria. Her rival, the nominal emperor, was obliged to fly before her; and, abandoned by his allies, as well as stripped of his hereditary dominions, he retired to Frankfort, where he lived in obscurity. Meanwhile the British and Hanoverian army advanced in order to effect a junction with that under Prince Charles, by which they would have outnumbered their enemies; and to prevent this the French opposed an army of sixty thousand men, upon the Maine, under the command of Marshal de Noailles, who posted his troops on the eastern side of that river. The British army was commanded by the Earl of Stair, who, although he had learned the art of war under Eugene and Marlborough, suffered himself to be inclosed by the enemy on every side, near a village called Dettingen; and in this situation the whole army, with the king himself, who had by this time arrived in the camp, must have been taken prisoners, had the French behaved with ordinary prudence. But their impetuosity saved the combined force from destruction. They passed a defile which they ought to have contented themselves with guarding, and, under the conduct of the Duke de Grammont, their horse charged the British foot with great fury; but they were received with unshaken firmness, and at last obliged to repass the Maine with precipitation, and the loss of about five thousand men. The British monarch, who was present in the battle, displayed equal courage and conduct, and in some measure atoned for an error which might otherwise have proved fatal.

But though the British were victorious in this engagement, the French were very little disconcerted by it. They opposed Prince Charles, and interrupted his attempts to pass the Rhine; and in Italy they also gained some advantages; but their chief hopes were placed on an intended invasion of England. From the violence of parliamentary disputes in England, France had been persuaded that the country was ripe for a revolution, and only wanted the presence of the pretender to bring about a change. An invasion was therefore projected; the troops destined for the expedition amounted to fifteen thousand; and preparations were made for embarking them at Dunkirk and some of the ports nearest to England, under the eye of the young pretender. The Duke de Roquefeuille, with twenty ships of the line, was to see them safely landed on the opposite shore; and the famous Count Saxe was to command them when disembarked. But the whole project was disconcerted by the appearance of Sir John Norris, with a superior fleet, which obliged the French squadron to put back; while a severe gale of wind damaged their transports, and thus entirely frustrated the scheme of a sudden descent. But the national joy for Sir John Norris's success was soon damped by the miscarriage of Admirals Mathews and Lestock, who, through a misunderstanding, suffered a French fleet of thirty-four sail to escape them near Toulon.

In the Netherlands the British arms were also attended with ill success. The French had there assembled an army of a hundred and twenty thousand men, commanded by Count Saxe, natural son of the late king of Poland, and an officer of great experience. The English were under

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son of the Duke of Cumberland, whose army was much inferior in number to that of the enemy, whilst in point of knowledge of war the disparity between him and the French general was still greater. Count Saxe, therefore, carried all before him. In the year 1743 he besieged Fribourg, and in the beginning of the campaign of 1744 he invested the strong city of Tournay. To save the place, if possible, the allies resolved to hazard an engagement; and this brought on the memorable battle of Fontenoy. The French were posted behind the town of that name, on some eminences which completely commanded the defile which formed the only approach to the position. At two in the morning the assailants quitted their camp, and about nine the British infantry, formed in a kind of grand square, attacked the centre of the enemy's line, which was drawn up in a sort of avenue to receive them. But from the confined nature of the ground, the obstinacy of the resistance in front, and the flanking fire kept up from some woody heights which domineered over the defile, this fine body of troops was never able to develop its attack nor to clear the defile; yet, in spite of every effort of the enemy, it maintained its ground till three in the afternoon, preserving its formation unbroken, notwithstanding the plunging fire of the French artillery, and the concentrated musketry of their infantry, to which it was without intermission exposed; and at last it retired in perfect order, facing round at intervals, and checking the pursuit of the enemy. The loss of the allies amounted to twelve thousand men, and that of the French was even greater; but the victory nevertheless gave them the superiority during the rest of the campaign, as well as during the remainder of the war. The capture of Tournay was the first fruit of this dear-bought success; and though the Elector of Bavaria, whom they had proclaimed emperor, was now dead, the French were too much elated by success to relax in their operations against the allies.

To balance the defeat at Fontenoy, however, Admirals Rowley and Warren retrieved the honour of the British flag, and made several rich captures at sea. The fortress of Louisbourg, a place of great consequence to the British commerce, surrendered to General Pepperel; and a short time afterwards two French East India ships, and a Spanish ship from Peru laden with treasure, put into the harbour, supposing it still their own, and were taken.

During this gleam of returning success, Charles Edward, the son of the old pretender to the British crown, resolved to make an attempt to recover what he called his right. Being furnished with some money from France, he embarked for Scotland on board of a small frigate, accompanied by the Marquis of Tullibardine, Sir Thomas Sheridan, and some others; and for the conquest of the whole British empire, he only brought with him seven officers, and arms for two thousand men. Fortune, however, seemed nowise more favourable to this attempt than to others similar to it. His convoy, a ship of sixty guns, was so disabled in an engagement with an English man of war, that it was obliged to return to Brest, whilst he continued his course to the western parts of Scotland. On the 27th of July 1745 he landed on the coast of Lochaber, and was in a little time joined by the Highlanders to the number of fifteen hundred men. The ministry at first could scarcely be induced to credit the story of his arrival; but when it could no longer be doubted, they sent Sir John Cope with a small body of forces to oppose his progress. A favourable opportunity offered for striking a blow at Corryarrick; but Cope, who seems to have been equally devoid of conduct and of energy, withdrew to Inverness, thus uncovering the road to the low country.

The young adventurer, availing himself of this blunder, immediately marched to the south, and arrived at

Perth, where he performed the ceremony of proclaiming his father king of Great Britain. He then proceeded towards Edinburgh, and, his forces continually increasing, entered the capital without opposition; but he was unable, from want of cannon, to reduce the castle. Here he again proclaimed his father; and promised to dissolve the union, which was still considered as one of the national grievances. In the mean time Sir John Cope, having arrived from Inverness, and been reinforced by two regiments of dragoons, resolved to give battle to the enemy. The insurgents, however, attacked him at Gladsmuir, near Prestonpans, and in a few minutes put him and his troops to flight, with the loss of five hundred men. This victory gave the insurgents great hopes, from the impression it produced; and had the pretender marched directly to England, the result might perhaps have been fatal to the House of Hanover. But he was amused by the promise of succours which in fact never arrived, and thus induced to remain in Edinburgh till the season for action was lost. He was joined, however, by the Earl of Kilmarnock, Lord Balmerino, Lords Cromarty, Elcho, Ogilvy, Pittligo, and the eldest son of Lord Lovat, who with their vassals considerably increased his army; and Lord Lovat himself, so remarkable for his treachery, was favourably disposed towards the pretender, although unwilling to act openly for fear of the government. But whilst Charles was thus trifling away his time at Edinburgh, the British ministry were taking most effectual methods to oppose him. Six thousand Dutch troops, which had come over to assist the government, were dispatched northward under the command of General Wade; but this force was then in some measure incapable of acting, being prisoners of France upon parole, and under engagements not to oppose that power for a year. Be this as it may, however, the Duke of Cumberland arrived soon afterwards from Flanders, and was followed by a detachment of dragoons and infantry, well disciplined and inured to action; whilst volunteers offered their services in every part of the kingdom.

At last Charles resolved upon an irruption into England. He entered that country by the western border, and took the town of Carlisle; after which he continued his march southwards, having received assurances that a considerable body of forces would be landed on the southern coasts to create a diversion in his favour. He established his head-quarters at Manchester, where he was joined by between two and three hundred English formed into a regiment under the command of Colonel Townley; and thence he pursued his march to Derby, intending to go by the way of Chester into Wales, where he hoped to be joined by a great number of malcontents; but in this he was prevented by the factions among his followers.

Having now advanced within a hundred miles of London, that capital was thrown into the utmost consternation; and had he proceeded with the same expedition which he had hitherto used, he might perhaps have made himself master of it. But he was prevented from pursuing this or any other rational plan by the discontents which began to prevail in his army. The young pretender was in fact but the nominal leader of his forces; and his generals, the Highland chiefs, were equally averse to subordination and ignorant of command. They now, however, became unanimous in their resolution to return to their own country; and Charles was forced to comply. Accordingly they retreated to Carlisle without sustaining any loss; and thence crossing the Eden and Solway, entered Scotland. They next marched to Glasgow, which was laid under severe contributions; and thence proceeding to Stirling, they were joined by Lord Lewis Gordon at the head of some forces which had been assembled in his absence. Other clans likewise came in; while some supplies of money re-

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ceived from Spain, and some skirmishes with the royalists, in which he was victorious, caused the pretender's affairs to assume a much more promising aspect. Being joined by Lord Drummond, he invested the castle of Stirling, in the siege of which much valuable time was consumed to no purpose. General Hawley, who commanded a considerable body of forces near Edinburgh, undertook to raise the siege, and with this view advanced as far as Falkirk in order to give battle to the Highland army. After some time spent in mutual observation, an engagement ensued on the 17th January 1746, in which the king's troops were entirely defeated. The Highlanders advanced to the attack with their usual impetuosity, threw in a volley or two, and then drawing their claymores, rushed forward, sword in hand, to close with the enemy. The onset proved irresistible; infantry and cavalry were intermingled in one common rout; and the whole artillery and tents of the royal army fell into the hands of the conquerors.

But the victory of Falkirk was the last of the triumphs of the rebel army. The Duke of Cumberland having arrived, put himself at the head of the troops at Edinburgh, amounting to about fourteen thousand men; and with these he marched to Aberdeen, where he was joined by several of the nobility attached to the house of Hanover, the enemy in the mean time retreating before him. He next advanced to the banks of the Spey, a deep and rapid river, where the Highlanders might have successfully disputed his passage; but their mutual contentions had now risen to such a height that they could scarce agree in any thing. At last, however, they resolved to make a stand, and for this purpose selected Drummoissie Muir, near Culloiden, nine miles distant from Inverness; the only ground in the whole country where cavalry and artillery, the two arms which they had most reason to dread, could act with effect against them. Their numbers amounted to about eight thousand; and after an abortive attempt to surprise the royal army at Nairn, they returned to their position and drew out to receive the attack. At one in the afternoon of the 15th of April 1746, the cannonading commenced; and whilst the artillery of the rebels, from being miserably served, did little or no execution, that of the royal army, at every discharge, made frightful gaps in the Highland ranks. During the continuance of the cannonade, Cumberland observing that the right of the Highlanders was covered by a wall, ordered a body of men to advance and pull it down. The Campbells, to whom this service was committed, promptly obeyed the order; and the right wing of the Highlanders being thus uncovered, they became exposed to a flanking fire as well as to that in front, which was now kept up with the greatest vivacity. In this trying situation a body, chiefly Atholmen, about nineteen hundred strong, unable any longer to sustain the galling fire which was poured in on their ranks, and conscious that their real strength lay in close combat, advanced to the attack sword in hand; broke through Burrell's and Monro's regiments in an instant; and pressed on, with diminished numbers but dauntless resolution, against the second line of the royal army, amidst a concentrated and terrible fire from every gun that could be brought to bear upon them. The second line steadily awaited the onset of this forlorn hope, reserving their fire till it came quite close, when a destructive volley was thrown in, while Wolfe's regiment, formed *en potence*, opened at the same instant a flanking fire. The force of the charge was thus completely broken; a few and but a few of the assailants escaped; and the bravest, who did not fall by the murderous fire, perished in a desperate conflict with the English bayonets. Lochiel, advancing at the head of a small band, who had survived the encounter with the first line, was wounded in both ankles by a grape-shot while in the act of charging the second

line; and in this state he was carried off the field by his two brothers, between whom he had advanced. Macdonald of Keppoch was also rushing on in like manner to the attack, when, receiving a wound which brought him to the ground, he was conjured by a friend not to throw away his life, but to retire and rejoin the main body; but desiring his friend to provide for his own safety, Macdonald got upon his legs, and, whilst preparing again to advance, received another shot, by which he fell to rise no more. Most of the chiefs who commanded the body that advanced to the charge, and almost every man in the front ranks, were killed. Unfortunately the Highland regiments on the left did not advance to close combat, or support the gallant attack which has just been described: had they done so, the issue might have been very different. After exchanging a volley or two with the right wing of the duke's army, and answering the fire of some dragoons who hovered near, they retreated, and separating into small parties, were cut up in detail, losing more men in proportion than the brave band who had made so gallant and vigorous an effort to retrieve the fortune of the day. In less than thirty minutes the battle was lost, and with it a final period was put to all the hopes of the young adventurer. The conquerors behaved with the greatest cruelty, refusing quarter to the wounded, the unarmed, and the defenceless; and some were slain who had only been spectators of the combat; whilst soldiers were seen to anticipate the base employment of the executioner. The duke, immediately after the action, ordered thirty-six deserters to be executed; the conquerors spread terror wherever they went; and in a short time the whole country around became one dreadful scene of plunder, slaughter, and desolation.

Immediately after the battle, the pretender fled with a captain of Fitzjames's cavalry; and when their horses were fatigued, they both alighted, and separately sought for safety. There is a striking resemblance between the adventures of Charles II. after the battle of Worcester, and those of the pretender after the battle of Culloiden. For several days he wandered through the country; sometimes he found refuge in caves and cottages, without any attendants at all; sometimes he lay in forests with one or two companions of his distress, continually pursued by the troops, there being a reward of £30,000 offered for taking him either dead or alive. In the course of his adventures he had occasion to trust his life to the fidelity of above fifty individuals, not one of whom could be prevailed on, even by so great a reward as that which was offered, to betray him whom they looked upon as the son of their king. For six months the unfortunate Charles continued to wander in the mountains of Glengarry, often hemmed round by his pursuers, but still rescued, by some providential accident, from the impending danger. At length a privateer of St Maloes, hired by his adherents, having arrived in Lochranach, he embarked on board that vessel for France. At this time he was reduced to a state of inexpressible wretchedness, being clad in a short coat of black frize, threadbare, over which was a common Highland plaid girt round him by a belt, from which hung a pistol and dagger. He had not been shifted for many weeks; his eyes were hollow, his visage was wan, and his constitution greatly impaired by famine and fatigue. Accompanied by Sullivan and Sheridan, two Irish adherents, who had shared all his calamities, together with Cameron of Lochiel, his brother, and a few other exiles, he set sail for France, and, after having been chased by two English men of war, arrived in safety at a place called Roseau, near Morlaix, in Bretagne.

While the pretender was thus pursued, the scaffolds and gibbets were preparing for his brave adherents. Seventeen officers were hanged, drawn, and quartered, at Kenning-

sign of ton Common, in the neighbourhood of London; nine were executed in the same manner at Carlisle, and eleven at York. A few obtained pardons, and a considerable number of the common men were transported to America. The Earls of Kilmarnock and Cromarty, and Lord Balmerino, were tried and found guilty of high treason. Cromarty was pardoned, but Kilmarnock and Balmerino were executed; as was also Mr Radcliffe, brother to the Earl of Derwentwater, who received sentence upon a former conviction. Lord Lovat was tried, and suffered some time afterwards.

Immediately after the suppression of the rebellion, the legislature undertook to establish regulations in Scotland, conducive to the happiness of the people and the tranquillity of the united kingdoms. The Highlanders had till that time continued to wear the military dress of their ancestors, and never went without arms; in consequence of which they considered themselves as a body of people distinct from the rest of the nation, and were ready upon the shortest notice to second the projects of their chiefs. Their habits were now reformed by an act of legislature, and they were compelled to wear clothes of the common fashion. But what contributed still more to destroy the spirit of clanship was the abolition of the hereditary jurisdictions which their chieftains exercised over them. The power of the chiefs was totally destroyed, and every subject in that part of the kingdom was liberated from the state of vassalage in which they had formerly lived.

Soon after the battle of Culloden the Duke of Cumberland proceeded to Flanders, where he resumed the command of the army, to which he was by no means equal. The French carried every thing before them, and reduced under their dominion all the strong places which had been taken by the Duke of Marlborough, and formed a barrier to the united provinces. They gained a considerable victory near Rocoux, though at a great sacrifice of men, which, however, they could easily spare, as they were much more numerous than their adversaries; and another victory which they obtained at Lafeldt served to depress still further the spirit of the allied army. But the taking of Bergen-op-Zoom, the strongest fortification of Brabant, was the event which naturally reduced the Dutch to the greatest alarm and distress.

These victories and successes in Flanders, however, were counterbalanced by almost equal disappointments. In Italy, the brother of Marshal Belleisle, attempting to penetrate into Piedmont at the head of thirty-four thousand men, was defeated and killed. A fleet had been fitted out for the recovery of Cape Breton, but without success; and two others were equipped, the one to make a descent upon the British colonies in America, and the other to carry on the operations in the East Indies; but these were attacked by Anson and Warren, and nine of their ships taken. Soon after this, Commodore Fox, with six ships of war, took above forty French ships richly laden from St Domingo; and about the same time the French fleet was defeated by Admiral Hawke, who took seven ships of the line and several frigates.

For a long time Louis had been desirous of peace, and this desire he even expressed to Sir John Ligonier, who had been taken prisoner at the battle of Lafeldt. But now the bad success of his admirals at sea, and his armies in Italy, the frequent bankruptcies of his merchants at home, and the election of a stadtholder in Holland, who gave spirit to the opposition;—all these contributed to make him weary of the war, and to propose terms of accommodation. This was what the allies had long wished for, but had been ashamed to demand. A congress was therefore held at Aix-la-Chapelle, and a treaty concluded, by which it was provided that all prisoners on each side should be mu-

tually given up, and all conquests restored; that the duchies of Parma, Placentia, and Guastalla, should be ceded to Don Philip, heir-apparent to the Spanish crown, and after him return to the house of Austria; that the fortifications of Dunkirk towards the sea should be demolished; that the British ship annually sent with slaves to the coast of New Spain should have this privilege continued for four years; that the king of Prussia should be confirmed in the possession of Silesia; and that the queen of Hungary should be secured in the possession of her patrimonial dominions. But the most mortifying clause was, that the king of Great Britain should, immediately after the ratification of this treaty, send two persons of rank to France as hostages, until restitution should be made of Cape Breton and all other British conquests during the war. No mention whatever was made of the searching of British vessels in the American seas, though this was the original cause of the quarrel; the limits of their respective possessions in North America were not ascertained; nor did they receive any equivalent for those forts which they had restored to the enemy.

In the year 1751 Frederick prince of Wales died of a pleurisy, which was not thought at first to be in any way dangerous. He was much regretted, for his good-nature had rendered him popular, and those who opposed the present administration had grounded their hopes of redress upon his accession to the throne.

Some time before this, in the year 1749, a scheme had been entered upon, from which the nation in general anticipated great advantages; namely, encouraging those who had been discharged from the army or navy to become settlers in Nova Scotia, a country cold, barren, and almost incapable of cultivation. Nevertheless, on account of this barren spot, the English and French actually renewed the war. The possession of this country was reckoned necessary for the defence of the English colonies to the north, and for preserving their superiority in the fisheries in that part of the world. The French, however, who had been long settled in the back parts, resolved to use every method to dispossess the new comers, and spirited up the Indians to begin hostilities. Another source of dispute also sprung up in the same part of the world. The French, pretending to have first discovered the mouth of the river Mississippi, claimed the whole adjacent country towards New Mexico on the east, and to the Apalachian Mountains on the west; and, in order to assert their claims, as they found several English who had settled beyond these mountains, they dispossessed them of their new settlements, and built such forts as were calculated to command the whole country round about. Negotiations and mutual accusations were followed by hostilities; and in 1756 four operations were undertaken by the British in America at once. Colonel Monkton had orders to drive the French from the province of Nova Scotia; General Johnson was sent against Crown Point; General Shirley against Niagara, to secure the forts on the river; and General Braddock against Fort du Quesne. In these expeditions Monkton was successful; Johnson was also victorious, though he failed in taking the fort against which he was sent; Shirley was thought to have lost the season of operation by delay; and Braddock was defeated and killed.

But, in return for this failure of success, the British made reprisals at sea; and here they were so successful that the French navy was unable to recover itself during the continuance of the war. The first measure of the French was to threaten an invasion. Several bodies of their troops were sent down to the coasts opposite Britain, and these were instructed in the manner of embarking and relanding from flat-bottomed boats, which were made in great numbers for the purpose. The number of men amounted

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to fifty thousand, but all discovered the utmost reluctance to the undertaking. The ministry were greatly alarmed, and applied to the Dutch for six thousand men, which they were by treaty obliged to furnish in case of invasion. But this supply was refused, the Dutch alleging that their treaty was to send the troops in case of an actual, and not of a threatened, invasion. The king, therefore, finding he could not reckon upon the Dutch forces till their assistance would be too late, desisted entirely from his demand; and the Dutch with great cordiality returned him thanks for withdrawing his request. Upon this ten thousand Hessians and Hanoverians were brought over; a proceeding which occasioned great discontent. The ministry were reviled for such disgraceful conduct, as if the nation was unable to defend itself; whereas the people only demanded a vigorous exertion of their own internal strength, and then feared no force that could be led to invade them.

The threatened invasion, however, never took place. But a French army landed in Minorca, and invested the citadel of St Philips, which was reckoned the strongest in Europe, but the garrison was nevertheless weak, and nowise fitted to stand a vigorous siege. To raise this siege, Admiral Byng was dispatched with a squadron of ten men of war, with orders to relieve Minorca, or at any rate to throw a body of troops into the garrison. But this last he reckoned too hazardous an undertaking, nor did he even attempt it; and soon afterwards a French fleet appeared nearly equal in force to his own, when he resolved to act only on the defensive. The French advanced, and a slight engagement ensued with part of the English fleet; after which the enemy slowly withdrew, and no other opportunity occurred of coming to a close engagement. Upon this it was resolved in a council of war to return to Gibraltar to refit, and agreed that the relief of Minorca was impracticable. For such pusillanimous, if not treacherous conduct, Byng was brought home under arrest, tried, condemned to death, and shot. He suffered with the greatest resolution, after delivering a paper filled with protestations of his innocence as to any treacherous intention.

After the conquest of Minorca, the French declared that they would revenge all injuries which they might sustain in their colonies on the king of Britain's dominions in Germany. Upon this the court of London, eager to preserve Hanover, entered into a treaty with the court of Russia, by which it was stipulated that a body of fifty thousand Russians should be ready to act in the British service, in case Hanover should be invaded by the French; for which the Czarina was to receive L.100,000 annually, to be paid in advance. But the treaty was opposed by the king of Prussia, who had long considered himself as guardian of the interests of Germany, and was therefore alarmed at a treaty which threatened to deluge the empire with an army of barbarians. Besides, he was already apprised of an agreement between the Austrians and Russians, by which the latter were to enter the empire and strip him of his late conquest of Silesia. He therefore declared that he would not suffer any foreign forces to enter the empire, either as auxiliaries or principals; so that the king of Britain found himself obliged to drop his Russian connection, and conclude a treaty with the king of Prussia. As both monarchs wished only to prevent the invasion of Germany, they soon came to an agreement to assist each other mutually; and from this alliance a new combination took place among the European powers, quite opposite to the former one. Britain opposed France in America, Asia, and on the ocean. France attacked Hanover, which the king of Prussia undertook to protect; whilst Britain promised him troops and money to assist his operations. Austria having aims on the dominions of Prussia, drew the Elector of Saxony into the same designs; and in these views the

Austrians were seconded by France, Sweden, and Russia, ^{Reign of George II.} who had hopes of acquiring a settlement in the west of Europe.

Thus the king of Prussia launched into the tumult of war, having only the king of Britain for his ally; whilst the most powerful states of Europe were his antagonists. He now performed a series of exploits which, taken as a whole, are not surpassed in the annals of modern times, and of which a particular account will be given in the article PRUSSIA. The British ministry, in order to create a diversion in his favour, planned an enterprise against the coast of France; but the destination of the fleet equipped for this purpose was kept a profound secret. At last, however, it appeared before Rochefort, where the commanders, having trifled away their time in deliberating how to proceed, took the little island of Aix, an easy and useless conquest, and soon afterwards returned home without attempting any thing else. By this miscarriage the ministry were so discouraged that they had thoughts of abandoning the king of Prussia to his fate; and the king was actually meditating a negotiation of this nature, when he was prevented by the expostulations of his distressed ally. From motives of generosity, therefore, more than of interest, it was resolved to continue to assist him; and success, which had long fled from the British arms, once more began to return with double splendour.

It was in the East Indies where this return of good fortune first manifested itself; but the British conquests in the western part of the world speedily eclipsed those in the eastern. These successes must, in part at least, be ascribed to the vigorous administration of Mr William Pitt, who about this time came into power. An expedition was set on foot against Cape Breton, under General Amherst and Admiral Boscawen; another under General Abercrombie, against Crown Point and Ticonderago; and a third under Brigadier-General Forbes, against Fort du Quesne. The fortress of Louisbourg, which defended the island of Cape Breton, was strong both by nature and art; the garrison was numerous, the commander vigilant, and every precaution had been taken to prevent a landing; but the activity of the British surmounted every obstacle; and the place having been surrendered by capitulation, its fortifications were demolished. The expedition against Fort du Quesne was equally successful; but that against Crown Point once more miscarried. General Abercrombie attacked the French in their intrenchments, but was repulsed with great slaughter, and obliged to retire to his camp at Lake George. But though in this respect the British arms were unsuccessful, yet, upon the whole, the campaign of 1758 ended greatly in their favour. The taking of Fort du Quesne served to remove from their colonies the terror of the incursions of the Indians, whilst it interrupted the communication along a chain of forts with which the French had environed the British settlements in America; and the succeeding campaign promised still greater success.

In 1759 it was resolved to attack the French in several parts of their territory at once. General Amherst, with a body of twelve thousand men, was commanded to attack Crown Point; General Wolfe was to undertake the siege of Quebec; whilst General Prideaux and Sir William Johnson were to attempt a French fort near the cataracts of Niagara. This last expedition was the first that succeeded. The siege was begun with vigour, and promised an easy conquest; but General Prideaux being killed in the trenches by the bursting of a mortar, the command devolved on General Johnson. A body of French troops, sensible of the importance of the place, attempted to relieve it, but were utterly defeated and dispersed; and soon afterwards the garrison surrendered prisoners of war. On his arrival at the forts of Crown Point and Ticonderago, Ge-

General Amherst found them deserted and destroyed. There now remained, therefore, but one decisive blow to be struck in order to reduce the whole of North America under the British dominion; namely, by the capture of Quebec, the capital of Canada. This expedition was commanded by Admiral Saunders and General Wolfe. The enterprise was attended with difficulties which appeared insurmountable; but all these were overcome by the admirable conduct of the general, and the great bravery of his men. He engaged and put to flight the French under Montcalm; but, to the great regret of the British, he was killed in the action nearly at the same instant that his adversary also fell. The surrender of Quebec was the consequence of this victory, and it was soon followed by the cession of all Canada. The next season, indeed, the French made a vigorous effort to recover the city; but by the resolution of Governor Murray, and the appearance of a British fleet under the command of Lord Colville, they were obliged to abandon the enterprise. The whole province was soon after reduced by the prudence and activity of General Amherst, who obliged the French army to capitulate; and it has ever since remained as a dependency of the British empire. About the same time also the island of Guadaloupe was reduced by a force under Commodore More and General Hopson.

At the beginning of the war the British affairs in Germany had worn a very unfavourable aspect. The Hanoverians were commanded by the Duke of Cumberland, who, greatly outnumbered by the enemy, was obliged to retire beyond the Weser. The passage of this river by the enemy might have been disputed with success; but the French were suffered to effect it unmolested. The Hanoverians were then driven from one part of the country to another, till at length they made a stand near a village called Hastenbach, where it was hoped the numbers of the enemy would not avail them in a general engagement. The Hanoverians, however, left the field of battle to the French, after a feeble resistance. The latter pursued, and the duke retired towards Stade; by which means he marched into a country where he could neither procure provisions nor attack the enemy with any prospect of success. And here, being unable either to escape or advance, he was compelled to sign a capitulation, by which the whole army laid down their arms, and were afterwards dispersed into different cantonments. By this disgraceful surrender, which was called the capitulation of Closter Seven, Hanover was obliged to submit quietly to the French, and the latter were thus left at full liberty to turn their arms against the king of Prussia.

Soon after this capitulation, both sides began to complain that the treaty had not been strictly observed. The Hanoverians exclaimed against the rapacity of the French general and the brutality of his soldiers. The French retorted the charge, accusing the Hanoverians of insolence and insurrection; and being sensible of their own superiority, resolved to bind them strictly to their terms of agreement. The Hanoverians, however, only wished for a pretence to take arms, and for a general to head them; and neither was long wanting. The oppressions of the tax-gatherers whom the French had appointed were considered as so severe, that the army rose to vindicate the freedom of their country; and Prince Ferdinand of Brunswick put himself at its head. As soon as this became known in Britain, large supplies were granted, both for the service of the king of Prussia, and for enabling the Hanoverian army to act vigorously in conjunction with him. A small body of British forces was sent over to join Prince Ferdinand under the Duke of Marlborough; but after some considerable successes at Crevelt, the Duke of Marlborough died, and the command of the British forces devolved on Lord

George Sackville. A misunderstanding, however, arose between him and Prince Ferdinand, the effects of which appeared at the battle of Minden, that was fought shortly after. Lord George, who commanded the British cavalry, pretended that he could not understand the orders sent him by the prince, and of consequence did not obey them. The allies gained the victory, but it would have been more decisive had the British commander obeyed his orders. He was soon after recalled, tried by a court-martial, found guilty of disobedience, and declared incapable of serving in any military command for the future. After this victory it was generally imagined that one reinforcement more of British troops would terminate the war in favour of the allies; and that reinforcement was accordingly sent. The British army in Germany was augmented to upwards of thirty thousand men, and sanguine hopes of conquest were generally entertained. But these hopes proved to be ill founded. The allies were defeated at Corbach, but retrieved the honour of their arms at Exdorf. A victory at Warbourg followed shortly after, and this was succeeded by another at Zierenberg. But they suffered a reverse at Compen; after which both sides retired into winter quarters.

On the 25th of October 1760 died George II. He had risen at his usual hour, and observed to his attendants, that as the weather was fine, he would take a walk into the garden of Kensington, where he then resided. But in a few minutes after his return, being left alone, he was heard to fall heavily on the floor; and the noise bringing his attendants into the room, they lifted him into bed, when he desired in a faint voice that the Princess Amelia might be sent for; but before she could reach the apartment his majesty expired, in the seventy-seventh year or his age and thirty-third of his reign. An attempt was made to bleed him, but without effect; and afterwards the surgeons, upon opening him, discovered that the right ventricle of the heart had been ruptured, and a great quantity of blood discharged through the aperture.

CHAP. XII.

REIGN OF GEORGE III.

Accession of George III.—Success of the British arms.—Proposals of peace.—A war with Spain proposed by Mr Pitt.—His resignation.—Created Earl of Chatham.—War with Spain.—France and Spain declare war on Portugal.—Invasion of that country.—Spaniards defeated.—Taking of Havana.—Philippine Islands reduced.—Extent of the conquests of Britain.—Peace of 1763.—Discontents.—Cyder tax.—Resignation of Lord Bute.—New ministry.—Supposed influence of Lord Bute.—Proceedings against John Wilkes.—Licentiousness of the time.—Expedients resorted to in order to increase the revenue.—Renewal of the Charter of the Bank.—Taxation of America.—Act against illicit trade with the Spaniards.—Stamp Act.—Violent resistance of the Americans.—Conduct of Administration.—Disturbances in London.—Illness of the King, and Regency Bill.—Change of Ministry.—Death of the Duke of Cumberland.—Stamp Act repealed.—Consequences.—Return of Wilkes.—Differences with Spain about the Falkland Islands.—Negotiations.—The affair terminated, and the settlement abandoned.—Proceedings of the corporation of London.—Speech of Mr Beckford, the Lord Mayor.—His death.—Ex-officio Informations.—Law of Libel.—Debates concerning the conduct of the Judges.—Tumult in the House of Lords.—Case of New Shoreham and its Christian Club.—Licentiousness of the Press.—Proceedings of the House of Commons against some printers.—Ridiculous expedient resorted to in order to avoid a contest with Wilkes.—East India Affairs.—Discouragement of the popular party.—Meeting of Parliament.—Augmentation of the number of Seamen.—Subscription of the thirty-nine Articles.—Royal Marriage Bill.—Bill for the relief of the Dissenters rejected.—East India Affairs.—Exportation of tea, and its consequences.—Regulation Bill.—Reports of the Select and Secret Committees.—Lord Clive accused.—His acquittal.—American

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affairs.—Boston Port Bill.—Repeal of the Tea-duty refused.—Administration of Justice Bill.—Quebec Bill.—Lord Chatham's motion for the recall of the troops.—Petitions of various kinds, and debates thereon.—Chatham's Scheme of Conciliation rejected.—Address on the American papers.—Violent debates.—New England Restraining Bill.—The American fisheries.—War resolved on.

King George III. ascended the throne amidst the greatest successes both by sea and land. At this time, indeed, the efforts of Britain in every quarter of the globe were truly astonishing. The king of Prussia had received a subsidy; a large body of English forces commanded the extensive peninsula of India; another army of twenty thousand men confirmed the conquests in North America, while thirty thousand were employed in Germany; and a great many more were dispersed in garrisons in different parts of the world. But all this was surpassed by the naval force, which carried every thing before it, and totally annihilated the French maritime power. The courage and conduct of the English admirals excelled every thing that had been heard of before; neither superior force, nor numbers, nor even the terrors of the tempest, could intimidate them. Admiral Hawke gained a complete victory over an equal number of French ships in Quiberon Bay on the coast of Bretagne, in the midst of a storm, during the darkness of night, and, what a seaman fears still more, in the neighbourhood of a rocky shore.

When his majesty had met his parliament, which was on the 18th November 1760, he confirmed the hopes of his allies, and gave assurances of his intention to prosecute the war with vigour. By this time, however, the people were weary of conquests, especially those in Germany; and the general current of popular opinion seemed adverse to the German war. But for some time no change took place in the method of carrying it on. In 1761, however, proposals of peace were interchanged among the belligerent powers of Europe; but the French, designing to draw Spain into a confederacy with them, were not sincere in their intentions; and in this way the treaty came to nothing. An enterprise was projected against Belleisle, on the coast of France, which was conducted by Commodore Keppel and General Hodgson, and terminated in the capture of the island, with the loss of eighteen hundred men killed and wounded on the part of the British; and however unimportant such a conquest might be, the rejoicings on account of it were great. In Germany, however, the campaign was unsuccessful on the part of the allies. At first, indeed, they drove the French out of the territory of Hesse, and laid siege to the city of Cassel; but being defeated at Stangerod, they were forced to raise the siege, retire behind the Dymel, and again abandon Hesse to the enemy, after which they were followed and attacked by the French; and though the latter were defeated, they could with difficulty be prevented from making themselves masters of Munster and Brunswick.

During all this time appearances of negotiation were kept up; but at length M. Bussy, on the part of France, delivered to Mr Pitt a private memorial, signifying, that, in order to establish peace on a lasting foundation, the King of Spain might be induced to guarantee the treaty; and to prevent the differences which then subsisted between Britain and Spain from producing a fresh war in Europe, it was proposed, that in this negotiation the three points which had been disputed between the crown of England and Spain might be finally settled. These were, first, the restitution of some captures made upon the Spanish flag; secondly, a recognition of the privilege of the Spanish nation to fish upon the banks of Newfoundland; and, thirdly, the demolition of the English settlements in the Bay of Honduras. But this memorial was returned as wholly inadmissible. Mr Pitt declared that

it would be looked upon as an affront to the dignity of his master, and incompatible with the sincerity of the negotiation, to make any further mention of such a circumstance. Being now convinced of the sinister designs of Spain, this minister also proposed immediately to declare war against that country. But the proposal being rejected, he resigned his employment of secretary of state; upon which he was created Earl of Chatham, and had a pension of L.3000 per annum settled upon him for three lives.

The new administration, however, soon found that Mr Pitt was in the right; and war was accordingly declared against Spain. As Portugal was the ally of Britain, the French and Spaniards resolved to attack that kingdom, which was then in no condition to defend itself. The Portuguese monarch was haughtily commanded to accede to the confederacy against Britain, and threatened with the vengeance of France and Spain in the event of refusal. It was in vain that he promised to observe a strict neutrality, and urged the obligations he was under to the king of Britain. This moderate and reasonable representation only led to more haughty and insulting demands. His Portuguese majesty, however, continued to reject their proposals in the most resolute manner; and concluded his last declaration by stating, that it would affect him less to be reduced to the last extremity, than to sacrifice the honour of his crown, and all that Portugal held most dear, by submitting to become an unheard-of example to all pacific powers, which would no longer be able to enjoy the benefit of neutrality, whenever a war should be kindled between other powers with which the former were connected by defensive treaties. This declaration was issued on the 27th of April 1762; and soon afterwards France and Spain jointly declared war against Portugal.

As the design of the courts of France and Spain in making war with Portugal was professedly to deprive Great Britain of the military and commercial use of the harbours of that kingdom, their principal endeavours were directed against the two great ports of Oporto and Lisbon. With this view, three inroads were to be made; one to the north; another more to the south; and the third in the intermediate provinces, in order to sustain the other two bodies, and preserve a communication between them. The first body of troops was commanded by the Marquis of Savaria, and entering by the north-east of Portugal, marched towards Miranda, which he entered on the 9th of May, through the breaches made by the accidental explosion of a powder magazine. From Miranda the invaders marched to Braganza, which speedily surrendered; and Moncorvo was in like manner taken. They became masters of nearly the whole of the extensive province of Tras os Montes; and every thing being clear before them to the banks of the Douro, Oporto was given up for lost, and the admiralty prepared transports to carry off the effects of the British merchants. But on the Douro the career of this body was stopped by the peasants, who, animated and guided by some British officers, seized a difficult pass, and drove the enemy back to Moncorvo. The second body of Spaniards entered the province of Beira, and being joined by strong detachments, immediately laid siege to Almeida, which surrendered on the 25th of August. The Spaniards then pushed forward to Castello Branco, and marching to the southward, approached the banks of the Tagus. During the whole of their progress, and indeed throughout the whole campaign, Great Britain and Portugal had nothing that deserved the name of an army in the field; and all that could be done was by the defence of passes, by skirmishes, and by surprises. The third Spanish army had assembled on the frontiers of Estremadura, with the design of invading the province of Alentejo; and if this body of troops had been joined to the others, they would probably, in spite of all opposition,

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have forced their way to Lisbon itself; whilst by acting separately, it might have so distracted the defenders of the country as to enable the other invading forces to penetrate to that city. The Count of La Lippe Buckeburg, therefore, having arrived in Portugal, resolved if possible to prevent their entrance into that kingdom; and with this view he dispatched Brigadier-general Burgoyne to attack an advanced body of Spaniards which lay on the frontier in the town of Valentia de Alcantara. On the 27th of August the town was surprised, and the general who was to have commanded the invading force taken, together with one colonel, two captains, and seventeen subaltern officers, whilst one of the best regiments in the Spanish service was also entirely destroyed, and the enemy thus prevented from entering Alentejo. That part of the Spanish army which acted in the neighbourhood of Castello Branco having made themselves masters of several important passes, the combined army of British and Portuguese pretended to retire before them, in order to draw them into the mountainous tracts. They attacked the rear of the allies, but were repulsed with loss; yet they still continued masters of the country, and nothing remained but the passage of the Tagus to enable them to take up their quarters in the province of Alentejo. But this the count designed to prevent; and accordingly he employed General Burgoyne, who having formed a design of surprising them, committed the execution of it to Colonel Lee. In the night of the 6th of October this officer fell upon their rear, dispersed the whole body with considerable slaughter, destroyed their magazines, and returned with scarcely any loss. The season was now far advanced; immense quantities of rain fell; the roads were destroyed; and the Spaniards having obtained possession of no advanced post where they could maintain themselves, and being unprovided with magazines, fell back to the frontiers of their own country.

Nor were the British arms less successful in America and the East Indies. From the French were taken the islands of Martinico, St Lucia, St Vincent, and Grenada; from the Spaniards the strong fortress called Havana, in the island of Cuba. The conquest of the latter cost a number of brave men, more of whom were destroyed by the climate than by the enemy. But it was at this place that the fleets from the several parts of the Spanish West Indies, called the galleons and flota, assembled before they finally set out on their voyage for Europe; and the acquisition of it, therefore, united all the advantages which can be acquired in war. Nine of the enemy's men of war, with four frigates, were taken; three of their best ships had been sunk in the harbour at the beginning of the siege; and two more in great forwardness on the stocks were destroyed. In money and valuable merchandises the spoil did not fall short of three millions sterling. To this success in the western world may be added the capture of the Spanish register-ship called the *Hermione*, by the *Active* and *Favourite* king's ships. This happened on the 21st of May 1762, just as the *Hermione* was entering one of the ports of Old Spain; and the prize was valued at little short of a million sterling. In the East Indies an expedition, undertaken against the Philippine Islands, was committed to Colonel Draper, who arrived on this service at Madras in the latter end of June 1762. The seventy-ninth regiment was the only regular corps that could be spared for the expedition; but every thing was conducted with the greatest celerity and judgment. The British forces landed at Manilla on the 24th of September; on the 6th of October the governor was obliged to surrender at discretion; and soon after, the galleon bound from Manilla to Acapulco, laden with rich merchandise to the value of more than half a million, was taken by the

frigates *Argo* and *Panther*. By the conquest of Manilla there fell into the hands of the British fourteen considerable islands, which, from their extent, fertility, and convenience for commerce, were of the greatest importance. By this acquisition, joined to the successes in the western hemisphere, Britain secured every avenue of the Spanish trade, and interrupted all communication between the different parts of the vast but unconnected empire of Spain.

During this time the war in Germany had continued with the utmost violence; but although the allies under Prince Ferdinand had given the highest proofs of valour, no decisive advantage had been obtained over the French. It was, however, no longer the interest of Britain to continue a destructive contest. There never had been a period so fortunate or glorious for this island. In the course of the war she had conquered a tract of continent of immense extent. Her American territory approached to the borders of Asia, and the frontiers of the Russian and Chinese dominions. She had conquered twenty-five islands, all of them distinguishable for their magnitude, their riches, or the importance of their situation; by sea and land she had gained twelve battles, and reduced nine fortified cities, and about forty castles or forts; she had taken or destroyed above a hundred ships of war from her enemies, and acquired at least ten millions in plunder. Conquests so extensive and ruinous to the French and Spaniards naturally rendered them desirous of a peace, which was at length concluded at Paris on the 10th of February 1763. The terms granted, and which many thought too favourable, were, in substance, that the French king should relinquish all claims to Nova Scotia; that he should likewise give up the whole country of Canada; and that for the future the boundary betwixt the British and French dominions in America should be fixed by a line drawn along the middle of the river Mississippi from its source to the river Ibberville, and thence by a line along the middle of this river, and the Lakes Maurepas and Pontchartrain, to the sea. The islands of St Pierre, Miquelon, Martinico, Guadaloupe, Marigalante, Desirade, St Lucia, and Belleisle, were restored to France; whilst Minorca, Grenada, and the Grenadines, St Vincent, Dominica, and Tobago, were ceded to Great Britain. In Africa, the island of Goree was restored to France; and the river Senegal, with all its forts and dependencies, ceded to Great Britain. In the East Indies, all the forts and factories taken from the French were restored. In Europe, the fortifications of Dunkirk were to be destroyed; and all the countries, fortresses, and posts, belonging to the Electorate of Hanover, the Duke of Brunswick, and the Count of La Lippe Buckeburg, restored. In regard to Spain, the British fortifications on the Bay of Honduras were to be demolished; and the Spaniards were to desist from their claim of right to fish on the Newfoundland bank. The Havana was restored, in consequence of which Florida, St Augustine, and the Bay of Pensacola, were ceded to Britain; the Spaniards were to make peace with Portugal; and all other countries not particularly mentioned were to be restored to their respective owners at the beginning of the war.

The conclusion of the war did not by any means tend to heal those divisions which had arisen on the resignation of Mr Pitt; on the contrary, it furnished abundant matter of complaint for the discontented party, whose views at that time seem to have been the embarrassment and disturbance of an administration which they were unable to subvert. When the treaty was under consideration, however, only some faint attempts were made to oppose it; but it soon appeared, that though this opposition had proved so feeble, the spirit of the party was far from being exhausted. The actual state of affairs indeed favoured the views of those who delighted in turbulence and

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Reign of George III. in faction. A long and expensive war had drained the national treasure, and greatly increased the public debt; whilst heavy taxes had already been imposed, and it was still as necessary to keep them up, and even to impose new ones, as though the war had not ended. Thus the bulk of the nation, who imagined that conquest and riches ought to go hand in hand, were easily induced to believe the administration arbitrary and oppressive, seeing it continued to load them with fresh taxes after such great successes as had for some years past attended the British arms. And indeed it must be owned, that the new administration appear not to have been sufficiently wary in this respect. Amongst various methods of raising the supplies for 1763, they had recourse to a duty of four shillings per hogshead upon cyder, payable by the maker, and to be collected in the same manner as the rest of the excise duties. The other articles of supply, as well as the duty in question, furnished matter of declamation for the members in opposition; but this inflamed the popular fury to a great degree, and made the people readily receive as truth whatever was said by the minority in the parliamentary debates. Besides the usual declamations, the smallness of the sum to be raised by it was particularly urged. This, it was said, showed that the supplying of the wants of government could not be the sole motive for imposing such a duty; and it was further urged, that now the houses of all orders of people, noblemen of the first rank not excepted, were liable to be entered and searched at the pleasure of excisemen, a proceeding which was denominated a badge of slavery. This was the language held throughout all the cyder counties, by the city of London, and by most of the incorporations throughout the kingdom; and in short the whole nation was thrown into a violent ferment. The friends of administration, indeed, urged plausible arguments in favour of their scheme; but the utmost force of reason will go only a very little way in quieting popular clamour; and whilst opposition was railing against ministry within doors, every method was taken to excite the fury of the people without. Virulent libels, the audacity of which far exceeded any thing known in former times, now made their appearance; and such was the general intemperance in this respect, that it would be difficult to determine which side paid least regard to any kind of decency or decorum.

In the midst of this general ferment, the Earl of Bute unexpectedly resigned his office of first lord of the treasury; and his resignation immediately became an object of general speculation. By some he was highly censured for leaving his friends at a time when a little perseverance might have defeated all the designs of his enemies, and established his own power on the most solid foundation. Such conduct, it was said, must discourage the friends of government, and at the same time give proportional encouragement to its adversaries to insult it. Others contended that the earl was very little, if at all, influenced by popular opinion. He had demonstrated his firmness by taking a lead in the difficult but necessary affair of concluding peace; and this being accomplished, he had fully obtained his end, and performed the service to his country which was required of him. The event, however, showed that the former reasoning was nearest the truth. The popular resentment was not in the least abated by the resignation of his lordship, who, though now withdrawn from the ostensible administration of affairs, was still considered as principal director of the cabinet; and this opinion gained the more ground that none of the popular leaders were called into office, nor any apparent change made in the conduct of the new administration.

No reasonable objection could now be taken to those who filled the great offices of state. Mr Grenville, who

succeeded the Earl of Bute in the treasury, was a man of approved integrity, understanding, and experience. Lord Holland was universally considered as a very able man in office, and had already filled many high employments with a great degree of reputation. The other secretary, Lord Egremont, though he had not been long in office, was in every respect of an unexceptionable character. The rest of the departments were filled in a similar manner; yet the discontents and public clamours were not diminished. It was now alleged that the new ministers were not chosen on account of any superior gifts of nature or fortune, but merely because they had the art of insinuating themselves into favour at court; that the sole reason of their appointment was, that they might act as the passive instruments of the late minister, who, though he had thought proper to retire from office, had not yet abandoned his ambitious projects, but continued to direct every thing as if he had still been in power; that opposition to the new ministers was therefore opposition to him; and that it became those who understood the true interest of their country, and had a real regard to it, not to suffer such a scheme of clandestine administration.

Whether the party who made these assertions really believed them or not cannot be known; but the effect was exactly the same as if they had. The great object of both parties was power; but their different situations required that they should profess different political principles. The friends of Lord Bute, and of the succeeding administration, were for preserving to the crown the full exercise of the power of choosing its own servants. Their opponents, without denying this power, contended that, according to the spirit of the constitution, the crown should be directed in its exercise by motives of national utility, and not by private friendship. In appointing the officers of state, therefore, they insisted that respect should be paid to those who, possessing great talents, had done eminent services to the nation, who enjoyed the confidence of the nobility, and had influence amongst the landed and mercantile interests. The observance of this rule, they contended, was the only proper counterpoise against the enormous influence of the crown arising from the possession of so much patronage; nor could the nation be reconciled to such a power by any other means than a very popular use of it. Men might indeed be appointed according to the strict letter of the law; but unless these were persons in whom the majority of the nation already put confidence, they never would be satisfied, nor think themselves secure against attempts on the constitution of the kingdom.

In the mean time the disposition to libel and invective seemed to proceed beyond all bounds. The peace, the Scots, and the administration supposed to be directed by Scottish influence, afforded such subjects of abuse to the pretended patriots, that ministry resolved at last to make an example of one of them by way of deterring the rest from such licentiousness. For this purpose they made choice of the paper called the *North Briton*, which, in language somewhat superior to most other political productions of the time, had abused the king, the ministry, and the Scots, in an extravagant manner. One particular paper (No. xlv.) was deemed by those in power to be actionable; and John Wilkes, member for Aylesbury, was supposed to be the author of it. A warrant was therefore granted for apprehending the author, printer, and publishers, of this performance, but without mentioning Wilkes's name; nevertheless three messengers entered the house of that person on the night between the 29th and 30th of April 1763, with an intention to seize him. He objected, however, to the legality of the warrant, because his name was not mentioned in it, and likewise to the lateness of the

hour; and on being threatened with violence, the messengers thought proper to retire for the night. Next morning he was apprehended without making any resistance, though some violence was necessary to get him into a hackney-coach, which carried him before the secretaries of state for examination. On the first intimation of Wilkes's being in custody, application was made for a *habeas corpus*; but as this could not be sued out till four in the afternoon, several of his friends desired admittance to him, which was, however, refused on pretence of an order from the secretaries of state. But the order, though repeatedly demanded, could not be produced, or at least was not so; and on this account the gentlemen, conceiving that they were not obliged to pay any regard to messengers acting only by a verbal commission, entered the place where he was without further hesitation.

This illegal step was followed by several others in rapid succession. Wilkes's house was searched, and his papers seized in his absence; and though it was certain that a *habeas corpus* had now been obtained, he was nevertheless committed to the Tower. Here not only his friends, but several noblemen and gentlemen of the first distinction, were denied access to him; nor was his brother even allowed to see him. On the third of May he was brought before the Court of Common Pleas, where he made a speech, setting forth the great love he had for his majesty, the bad conduct of ministry, and especially his own grievances, alleging that he had been treated worse than a Scotch rebel. His case having been argued by several eminent lawyers, he was remanded to the Tower for three days; after which he was ordered to be brought up, that the affair might be finally settled. Next day Lord Temple received a letter from Secretary Egremont, informing him that the king judged it improper that Wilkes should continue any longer a colonel of the Buckinghamshire militia; and soon afterwards Temple himself was removed from the office of lord-lieutenant of that county. Meanwhile the judges decided that the warrant of a secretary of state was in no respect superior to that of a common justice of peace; that Wilkes's commitment was illegal; that his privilege as a member of parliament had been infringed; that this could not be forfeited except by treason, felony, or breach of the peace, none of which was imputed to him; and that a libel, even though it had been proved, had only a tendency to disturb the peace, without amounting to any actual breach of it. It was therefore resolved to discharge him; and the prisoner was accordingly set at liberty.

Wilkes having thus regained his freedom, resolved to make all the advantage he could of the errors committed by the ministry, and to excite as general a ferment as possible. For this purpose he wrote an impudent letter to the Earls of Egremont and Halifax, informing them that his house had been robbed, affirming that the "stolen goods" were in the possession of one or both of their lordships, and insisting upon immediate restitution. This letter was printed, and many thousand copies of it were dispersed; and soon afterwards an answer by the two noblemen was published in the newspapers, stating the real cause of the seizure of Wilkes's papers. The North Briton now again made its appearance, and the popular party were elated beyond measure with their success; whilst those who had suffered by general warrants sought redress at law, and commonly obtained damages far beyond their most sanguine expectations. During the whole summer, the minds of the people were kept in continual agitation by political pamphlets and libels of various kinds, whilst the affair of general warrants engrossed the general attention.

On the meeting of parliament his majesty mentioned in his speech the attempts which had been made to divide the people; and before the addresses could be moved in re-

turn, a message was sent to the Commons, informing them of the supposed offence of Wilkes, and of the proceedings against him, while the exceptionable paper was also laid before the house. After warm debates, the North Briton was voted a false, scandalous, and seditious libel, tending to excite traitorous insurrections; and this was followed by a declaration that the privilege of parliament does not extend to the writing and publishing of seditious libels. The paper in question was therefore condemned and ordered to be burnt by the hangman; but this was not done without great opposition from the mob.

Wilkes, now determined to make the best use of the victory he had gained, commenced a prosecution in the Court of Common Pleas against the under secretary of state, for seizing his papers; and the cause being determined in his favour, the defendant was subjected in L.1000 damages, with full costs of suit. The prosecution with which Wilkes had been threatened was now carried on with great vigour; but in the mean time, having grossly affronted Mr Martin, member for Camelford, by his abusive language in the North Briton, he was challenged by that gentleman, and dangerously wounded in the belly. Whilst he lay ill of his wound, the House of Commons put off his trial from time to time; but beginning at last to suspect that there was some collusion betwixt him and his physician, they ordered Dr Heberden, and Mr Hawkins, an eminent surgeon, to attend him, and report. Wilkes, however, did not think proper to admit these gentlemen; and soon afterwards took a journey to France. The Commons being informed that he had refused to admit the physician and surgeon sent by them, now lost all patience; and proceeding against him in absence, he was expelled the house. A prosecution was also commenced against him before the House of Lords, on account of an obscene and blasphemous attack on a spiritual peer; and failing to appear and answer the charges against him, he was outlawed. But the severity shown to Wilkes did not at all extinguish the spirit of the party. A general infatuation in favour of licentious and abusive writings seemed to have taken place. At the very time that Wilkes was found guilty of publishing the infamous pamphlet above mentioned, the common council of London presented their thanks to the city representatives for their zealous and spirited endeavours to assert the rights and liberties of the subject; and in gratitude to Lord Chief Justice Pratt for his decision in Wilkes's affair, they presented him with the freedom of the city, and desired him to sit for his picture, which was to be placed in Guildhall.

But these clamours did not prevent administration from paying attention to the exigencies of the nation. The practice of franking blank letters had risen to an incredible height, and greatly prejudiced the revenue. The hands of members of parliament were counterfeited, and the covers publicly sold without the least scruple; and besides, the clerks of the post office claimed a privilege of franking, which extended even further than that of the members of the house. An act was accordingly passed for remedying the evil, by restricting the practice within reasonable limits. At this time it was proved that the annual postage of letters sent free amounted to L.70,000, and that the profits accruing to the clerks of the post office amounted to between L.800 and L.1700 each. Among the other plans for augmenting the revenue, were those for settling the island of St John, and for the sale of the lately acquired American islands. The former was proposed by the Earl of Egremont, who presented a memorial to his majesty on the subject. The sale of the conquered lands, consisting of the islands of Grenada, the Grenadines, Dominica, St Vincent, and Tobago, took place in March 1764. Sixpence an acre was to be paid as a quit-rent for cleared

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lands, and a penny a foot for ground-rent of tenements in towns, and sixpence an acre for fields; but no person was to purchase more than three hundred acres in Dominica, or five hundred in the other islands. Amongst the most remarkable transactions of this year was the renewal of the charter of the bank, for which the latter paid the sum of £1,100,000 into the exchequer as a present to the public, besides advancing a million of money to government upon the security of exchequer bills.

But by far the most momentous affair which, at this time, occupied the attention of government, was the consideration of a project for raising a revenue from the American colonies. This had formerly been proposed to Sir Robert Walpole; but that prudent minister wisely declined to enter into such a dangerous scheme; observing, that he would leave the taxation of the colonies to those who came after him in office. The reason given for such a proceeding was the necessity of defraying the charge of defending them; and this, though extremely reasonable in itself, was effected in such a manner as raised a flame which could only be extinguished by the total overthrow of the authority of the parent state. Before this time, indeed, hints had been thrown out that it was not impossible for the colonists to withdraw their dependence on Britain; and some disputes had taken place betwixt the different provinces, which, although quieted by terror of the French, seemed to augur no good. But now, when the colonies were not only secured but extended, it was thought proper to make the experiment whether they would be obedient or not. They already contained more than two millions of people, and it was deemed absolutely necessary to raise a revenue from so numerous a body. Some thought it might be dangerous to provoke them; but to this it was replied by administration, that the danger must increase by forbearance, and that, as taxation was indispensable, the sooner the experiment was tried the better. The fatal trial being thus determined on, an act was accordingly passed for the prevention of smuggling, in order that the duties laid on the American trade might come into the hands of government. At this time there was carried on betwixt the British and Spanish colonies an illicit traffic, which seemed to bid defiance to all law and regulation, and which was no less obnoxious to the Spanish than to the British government. In some respects, however, the suppression of this commerce was very inconvenient to the colonists; for as the balance of trade with Britain was against them, they found it impossible to procure any specie except by trading with the Spaniards, who paid for their goods in gold and silver. This, with another act requiring them to pay certain duties in cash, was probably the cause of the resentment shown by the Americans to government, and their refusal to submit to the stamp act, which was also passed in the course of this year, having been carried through the Commons by a great majority.

The disposition to augment the revenue by all possible methods seems to have served to keep alive the general opinion as to the oppressive and arbitrary measures pursued by government. The ill humour of the British patriots still continued; and the stamp bills were received in America with the utmost indignation. The arguments for and against American taxation are at present of little importance, excepting in as far as concerns the constitutional question evolved by them, and now almost universally admitted, that taxation without representation is tyranny; and the particulars of the opposition of the colonists will be related under another head. We may however observe here, that the resistance of the colonists proved very distressing to the mother country, on account of the immense sums due by the former. To the merchants of London alone they were indebted to the extent of

four millions sterling; and so ready had the latter been to give them credit, that some of the American legislatures passed acts against incurring such debts for the future. A petition on the subject was also presented to the House of Commons; but as it denied the parliamentary right of taxation, it was not allowed to be read. It was then proposed, on the part of administration, that the agents should join in a petition to the house that they might be heard by counsel in behalf of their respective colonies against the tax; but the agents not thinking themselves empowered to prefer such a petition, the negociation was broken off, and matters went on in America as we have elsewhere related.

In other respects, the ministry took such steps as they judged necessary for supporting the honour and dignity of the nation. Some encroachments having been made by the French and Spaniards, remonstrances were made to their respective courts, and satisfaction obtained; and though every trifling was sufficient to set on the popular party, they were as yet unable to find any just cause of complaint. Nevertheless, the disposition to tumult and insurrection seems to have become general. The silk-weavers residing in Spitalfields being distressed for want of employment, arising, it was thought, from the clandestine importation of French silks, laid their case before his majesty in the year 1764, and the sufferers were relieved by the bounty of the public; but this seemed to render matters worse, by confirming them in habits of indolence and idleness. At the same time a bill, which was believed to be calculated to conduce to their benefit, having been thrown out, they began to assemble in great numbers, and several disorders were committed; nor was it without the assistance of the soldiery, and the utmost vigilance of the magistrates, that the riot could be suppressed. During this disturbance the ferment between the court and popular parties continued unabated, and ministers were still reviled in numberless publications, as mere dependents and tools of the Earl of Bute.

An event which now occurred, however, produced a considerable revolution at court, though it had but little effect in calming the minds of the people. This was the illness which seized the king in the beginning of the year; and whilst it filled the public mind with apprehensions, produced a bill for settling the affairs of the kingdom in case of the crown devolving on a minor. In adjusting this bill, ministers were said to have acted with but little respect to the Princess-dowager of Wales, in excluding her from a share of the government; and this proceeding was thought to have in a great measure alienated the confidence of his majesty, with whom the ministry had hitherto been in great favour. Nor did their subsequent conduct prove that they were at all desirous of regaining the ground which they had lost. For having contrived to get the Earl of Bute's brother turned out of a lucrative office he enjoyed in Scotland, they offended his majesty, without recommending themselves to the popular party in England, who manifested a perfect indifference as to all that passed in Scotland. On this occasion Lord Chatham is said to have been solicited to accept the office which he had formerly filled so much to the satisfaction of the nation, and to have declined it. A new ministry, however, was soon formed, on the recommendation of the Duke of Cumberland. The Duke of Grafton, and Mr Conway, brother to the Earl of Hertford, were appointed secretaries of state; the Marquis of Rockingham, first lord of the treasury; and Mr Dowdeswell, chancellor and under treasurer of the exchequer. The office of lord privy seal was conferred on the Duke of Newcastle; and the other places were filled with men of known integrity, and supposed to be agreeable to the people. These changes, however, did not give general

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In the mean time the discontents which had inflamed the American colonies continued also to agitate the minds of the people of Great Britain; nor indeed was it reasonable to expect that they could be satisfied with their present condition, commerce being nearly annihilated, manufactures at a stand, and provisions exorbitantly high priced. The large sums due to British merchants by the Americans also severely affected the trading and manufacturing part of the country; more especially as the colonists refused to pay unless the obnoxious laws should be repealed. The administration, therefore, were under the necessity of either enforcing the stamp act by the sword, or of procuring its immediate repeal in parliament. The loss of the Duke of Cumberland was now severely felt, as he had been accustomed to assist the ministry with his advice, and was respected by the nation for his good sense. But it seems doubtful if at this period human wisdom could have prevented the consequences which ensued. The administration endeavoured to avoid the two extremes, of rushing instantly into a civil war, or sacrificing the dignity of the crown or nation by irresolution and weakness; and suspended their decision until certain intelligence should be received from the American governors as to the state of affairs in that country. But the opposite party animadverted severely on this conduct, insisting on the most coercive methods being immediately adopted for enforcing the laws in which they themselves had had so great a share. Pacific measures, however, prevailed, and the stamp act was repealed; but at the same time another was passed, declaring the right of parliament not only to tax the colonies, but to bind them in all cases whatsoever. The repeal of the stamp act occasioned universal joy throughout Britain and America, though, as parliament insisted upon their right of taxation, which the opposite party denied, matters were still as far from any real accommodation as ever; and the ill humour of the Americans was soon afterwards increased by the duties laid upon glass, painters' colours, and tea imported into their country; whilst at home the high price of provisions, and some improper steps taken by ministry to remedy the evil, kept up the general outcry against them.

In this state of affairs administration were once more disturbed by the appearance of John Wilkes, who had returned from exile, and, on the dissolution of parliament in 1768, whilst his outlawry was still unreversed, stood candidate for the city of London. Failing, however, in his design of representing the city of London, he instantly declared himself a candidate for Middlesex. Innumerable tumults and riots immediately took place; and so great was the animosity betwixt the two parties, that a civil war seemed to be threatened. Any particular detail of these transactions would, however, be superfluous. It is sufficient to state, that on a trial the outlawry of Wilkes was reversed, and he was condemned for his offences to pay a fine of £1000, and to be imprisoned for twelve months. Idolized

by the people, however, and powerfully supported by merchants and persons of property, he was repeatedly chosen member for Middlesex, and as often rejected by the House of Commons. Tumults frequently occurred; and the interposition of the military was construed by the patriots as indicative of a design to establish ministerial authority by the most barbarous methods.

These dissensions did not pass unnoticed by the other European powers, particularly the French and Spaniards. Both had applied themselves with assiduity to the increase of their marine; and many began to prognosticate an attack from one or other or both of these nations. The Spaniards first showed an inclination to come to a rupture with Britain. The subject in dispute was a settlement formed on the Falkland Islands, near the southern extremity of the American continent. A scheme of this kind had been thought of as early as the reign of Charles II., but it was not till after Lord Anson's voyage that any serious attention had been paid to it. In the printed account of this expedition, his lordship pointed out the danger incurred by our navigators through the treachery of the Portuguese in Brazil, as well as the importance of discovering some place more to the southward, where ships might be supplied with necessaries for their voyage round Cape Horn; and, with this view, he indicated the Falkland Islands as an eligible rendezvous for vessels in these high southern latitudes. His lordship also, when at the head of the admiralty, forwarded the scheme, and some preparations were made for putting it in execution; but as it met with opposition at home, and gave offence to the court of Madrid, it was laid aside till the year 1764, when it was revived by Lord Egmont. Commodore Byron being then sent out with proper necessaries, took possession of these islands in the name of his majesty, and represented them in a favourable light; but his successor, Captain Macbride, affirmed that the soil was utterly incapable of cultivation, and the climate intolerable. Be this as it may, however, the islands in question had also attracted the notice of the French; but as that nation had been greatly reduced by the late war, no project of the kind could yet be put in execution at the public expense. M. Bougainville, therefore, undertook, with the assistance of his friends, to form a settlement on the Falkland Islands at their own risk; and the scheme was put in execution in the beginning of the year 1764, and a settlement formed on the eastern part of the same island in which Commodore Byron had established an English colony on the western side. But the French adventurers soon became weary of their new colony; and M. Bougainville, having been reimbursed for his expenses, the French gave up every claim of discovery or right of possession; while the Spaniards, landing some troops in 1766, took possession of the fort built by the French, and changed the name of the harbour to Port Solidad. In 1769, Captain Hunt of the Tamar frigate happening to be on a cruise off the Falkland Islands, fell in with a Spanish schooner which had been at Port Solidad, and charged the commander to depart from that coast, which he declared to be the property of his Britannic majesty. The schooner, however, soon returned, bringing an officer from the governor of Buenos Ayres, who gave a similar warning to Captain Hunt; and the latter, not choosing to push matters to extremities, set sail for England, where he arrived in June 1770. On the departure of Captain Hunt, two frigates were left at the Falkland Islands; but one of these was lost a short time afterwards. On the 4th of June 1770, a Spanish frigate arrived at the English settlement named Port Egmont, with a number of guns and other warlike implements for carrying on a regular siege; and in three days four other frigates arrived laden in the same manner; so that the English

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So audacious an insult to the British flag seemed to render war inevitable, if suitable reparation should be refused. It was accordingly mentioned in the speech from the throne in November 1770, when an immediate demand of satisfaction for the injury was promised; and it was further intimated that the necessary preparations for war, which had been begun, should not be discontinued. The affairs of America were also noticed; and, where grounds of complaint still existed, an assurance of redress was given. But these promises, especially in regard to the Falkland Islands, were far from giving satisfaction; and a motion was now made in both houses for an inquiry into the conduct of the Spaniards, as well as for the production of all papers and letters relative thereto. But the demand was opposed by the ministry, upon the grounds that the interest of the public service precluded the idea of exposing letters or papers transmitted in confidence while the negotiation was depending, and that the king of Spain had disavowed the conduct of his officer, and promised satisfaction.

Some time before this, Mr Harris, the English minister at the court of Madrid, had dispatched a letter to Lord Weymouth, informing him that a ship had arrived from Buenos Ayres, with an account of the intended expedition against Port Egmont, the number of men to be employed, and the time fixed for its departure; but Prince Maserans, the Spanish ambassador, had declared his belief that the governor of Buenos Ayres had employed force at Port Egmont without any orders, and expressed a hope that, by disavowing the proceeding, he might prevent any misunderstanding betwixt the two kingdoms. To this Lord Weymouth replied by inquiring whether the prince had any orders to disavow the proceedings of the governor; and, on his answering in the negative, his lordship demanded a formal disavowal. After some time, it was stated, on the part of Spain, that the prince was authorized to disavow any particular orders given to M. Bucarelli, the governor of Buenos Ayres; that the island should be forthwith restored; and that it was expected the king of Britain would, on his part, disavow the conduct of Captain Hunt, whose menace had induced the governor to act as he did. But this proposition did not prove satisfactory. Mr Harris was ordered to quit the court of Madrid; and the correspondence between Prince Maserans and the court of England was discontinued. About this time Lord Weymouth resigned his office, and was succeeded by the Earl of Rochford; and the affair of the Falkland Islands ceased to be spoken of.

But, on the meeting of the parliament in January 1771, it was again brought before the house, when the declaration of the Spanish ambassador, and Rochford's acceptance, were announced. Prince Maserans then disavowed, in the name of his master, the violence used at Port Egmont, the restitution of which was agreed to upon an understanding that such restitution should be considered as ample satisfaction, but not as affecting the question concerning the prior sovereignty of the islands. This produced a new demand for copies of all papers, letters, and declarations, relating to the Falkland Islands; and though it was now apparently complied with, the opposition affirmed that it was still only in part, since, besides a chasm of nearly two months, of which there was no account whatever, all copies of the claims or representations made by the court of Spain since the first settlement of the islands were kept back, and a suspicion was thus excited that the

concealment of these papers might proceed from some misconduct during the periods in question, over which administration were willing to draw a veil. On the part of the government it was answered, that every paper which could be found in the several offices had been presented; that if there had been any correspondence between the two courts of which no notice was taken in them, it must have been verbal; and that, at any rate, there were papers sufficient to enable the house to determine the propriety or impropriety of their conduct throughout the whole transaction. But these excuses did not satisfy the opposition, and a motion was made to address his majesty for information as to whether any such interference had taken place, and of what nature it was, or in what manner it had been conducted. The motion, however, was lost by a great majority in both houses. Nevertheless this manner of deciding the question was far from allaying the ferment which prevailed. The transaction was considered as disgraceful to the British nation; nor were all the arguments which could be used by the ministerial party sufficient to shake the general opinion. The restitution of the island was thought to be an inadequate recompense for the affront that had been offered; and the objections to it were urged on a motion for an address of thanks on account of the communication of the Spanish declaration, which was not carried without considerable difficulty, and in fact produced a protest from nineteen peers. On the part of Spain, however, every article of the agreement was ostensibly fulfilled; Port Egmont was restored, and the British once more took possession of it, though it was in a short time afterwards evacuated.

In other respects great discontent prevailed throughout the kingdom. A fire which happened at Portsmouth in the year 1770 excited numberless jealousies, and was by some imputed to our enemies on the Continent. The affair of the Middlesex election was not forgotten; and notwithstanding many repulses, the city of London still ventured to send up new petitions to the throne. In one presented this year by Mr Beckford, the lord mayor, the petitioners lamented having incurred the royal displeasure, but renewed a request, frequently preferred before, for a dissolution of parliament. This, however, met with a very unfavourable answer. His majesty informed the lord mayor, that his sentiments on the subject continued unchanged; and that he should ill deserve the title of father of his people, were he to suffer himself to be prevailed on to make such a use of his prerogative as he could not but think inconsistent with the interest, and dangerous to the constitution, of the kingdom. Mr Beckford, far from being disheartened by this answer, demanded leave to address the king; and having obtained it, made a speech of considerable length, which he concluded by telling his majesty, that "whoever had already dared, or should hereafter endeavour, by false insinuations and suggestions, to alienate his majesty's affections from his loyal subjects in general, and the city of London in particular, was an enemy to his majesty's person and family, a violator of the public peace, and a betrayer of our happy constitution as it was established at the glorious revolution." This behaviour of Mr Beckford was censured by the court party as indecent, unprecedented, impudent, and little short of high treason; whilst, on the other hand, it raised him to the highest pinnacle of popular favour. But he did not long enjoy the applause of the people; for he died a short time afterwards, and his death was considered as an irreparable loss to the whole party. Several other petitions were presented on the subject of popular grievances; but the perpetual neglect with which they were treated at last brought that mode of application into disuse.

A new subject of contention, however, now presented

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An accident which occurred soon afterwards contributed also to lessen in the eyes of the people the character, not only of the ministerial party, but that of both houses of parliament taken collectively; and indeed it must be owned that nothing could be more derogatory to the honour of the first assembly of the nation, or to that of the individuals composing it. On the 20th of December 1770 a motion was made by the Duke of Manchester, that an address be presented to his majesty, praying that he would be graciously pleased to give orders for quickening our preparations for defence in the West Indies and in the Mediterranean, and particularly for securing the posts of Gibraltar and Minorca. But whilst his grace was decanting on the negligence of the ministry in leaving posts of such importance in a defenceless state, he was suddenly interrupted by Lord Gower, who insisted on having the house immediately cleared of all except those who had a right to sit there. His lordship was answered by the Duke of Richmond, who complained of the interruption given to the Duke of Manchester as a proceeding both irregular and insidious. This produced a considerable degree of altercation; and the cry of "Clear the house" resounded from all quarters. Several members attempted to speak, but found it impossible; and, piqued at this shameful behaviour, eighteen or nineteen peers left the house in a body. The members of the House of Commons then present were not only commanded to depart, but some of the lords went personally to the bar, and insisted on their leaving the house immediately. The latter alleged in excuse, that they attended with a bill, and were there in the discharge of their duty; but this availed nothing; they were peremptorily ordered to withdraw till their message should be delivered, and at length turned out of doors amidst the greatest tumult and uproar. In the mean time the lords, who had just left their own house, repaired to the lower house, where they were listening to the debates, when the commoners who had been turned out of the Lords arrived, full of indignation, and loud in their complaints of the affront they had received. This was resented by turning out indiscriminately all the spectators; amongst whom were the eighteen peers just mentioned, who were thus excluded from both houses. This affair issued in a misunderstanding between the two houses, which continued during the remainder of the session. Sixteen lords joined in a protest, and censured in the warmest terms the treatment they had met with, as well as the unprecedented behaviour of administration, who had thus attempted to suppress the freedom of debate, and rendered the conduct of the house an object of contempt and ridicule to the whole world.

Soon after the discussion on the subject of the Falkland Islands, an extraordinary instance of corruption in the borough of New Shoreham, Sussex, was laid before parliament. The affair was brought by the returning officer, one Roberts, declaring a candidate duly elected who had only thirty-seven votes, whilst his opponent had eighty-seven suffrages; and when this man was brought to trial for so strange a proceeding, a scene of unparalleled villany was disclosed. A great number of the freemen of the borough had formed themselves into a society called the Christian

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Club, which, instead of sustaining the character indicated by its denomination, was rendered instrumental in furthering the purposes of venality. A select committee of the members had been appointed to sell the borough to the highest bidder. The committee-men never appeared at elections themselves, but issued orders to the rest, directing them as to how they were to vote; and after the election terminated, they shared the profits among themselves. All this was clearly proved; but the returning officer was nevertheless dismissed with a reprimand from the Speaker for having trespassed upon the forms which ought to have been observed by such a functionary. A more severe punishment, however, was reserved for the borough, particularly the wretches who had assumed the name of the Christian Club. A motion for inquiry having been carried unanimously, a bill was brought in to incapacitate eighty-one freemen of the borough, whose names were mentioned, from ever voting at parliamentary elections; and, for the more effectual prevention of bribery and corruption, the attorney-general was ordered to prosecute the committee belonging to the Christian Club. After some opposition the bill for incapacitation at length passed, and received the royal assent on the last day of the session.

The unbounded licentiousness of the press now attracted the notice of parliament, though the evil appeared incapable of being effectually checked. At this period neither rank nor character formed any security against calumny; and indeed it was difficult to say which side went farthest in the career of detraction and abuse. The ministry, however, provoked by a long course of opposition, made loud complaints against the freedom taken with their names; but it was retorted by the opposition, that the abuse from one quarter was as great as that from the other. Some members of the House of Commons complained that their speeches had been misrepresented in the papers, and endeavoured to put a stop to the practice of reporting them. It was at this time considered as contrary to the standing order of the house to print the speeches of the members of parliament; and a motion for calling two of the principal printers to account was carried by a considerable majority. The printers, however, did not attend the summons of the messenger; and a final order for their appearance was directed to be left at their houses, and declared to be sufficient notice when left there. The disobedience of the printers was undoubtedly occasioned by the favour which they hoped to obtain with the popular party; and indeed it was only after severe animadversion that the ministry were able to carry the motion against them. And this opposition was heightened by its being further moved that they should be taken into custody by the serjeant at arms, for contempt of the orders of the house; a proceeding which was objected to on account of the temper and disposition of the people towards the house, and the great impropriety of adding to their alarms by any unnecessary stretch of the executive power. But the majority urged the necessity of preserving the dignity of the house, and putting an end to those excessive freedoms which had been taken with its members. The serjeant at arms next complained, that not being able to find the printers at their houses, he had been treated with indignity by their servants; on which a royal proclamation was issued for apprehending the two obnoxious typographers, Wheble and Thomson, with a reward annexed. But in the mean time six other printers, who had rendered themselves equally obnoxious on a similar account, were ordered to attend the house, though the motion had not been carried without great opposition. Some of the delinquents were reprimanded at the bar, and one who did not attend was ordered to be taken into custody for contempt. Wheble being apprehended in consequence of the proclamation,

was carried before Alderman Wilkes, by whom he was discharged; Thomson was in like manner discharged; and the captors received certificates from the magistrates, in order to entitle them to the promised reward. Millar, one of the six who had refused to attend, was taken into custody at his own house by the messenger of the House of Commons; but he sent for a constable, and was carried along with the messenger before the lord mayor, and Aldermen Wilkes and Oliver, at the mansion-house. The lord mayor refused to deliver up the printer and messenger at the request of the serjeant at arms; and after some disputes the messenger was committed to prison, as he had been accused by Millar of assault and false imprisonment, and the serjeant had refused to find bail; but he was immediately released upon bail being given. The lord mayor was ordered to attend the house next day, when he pleaded that he had acted in no way inconsistent with the duties of his office, since by his oath he was bound to preserve the franchises of the city; and his conduct was further warranted by the terms of the city charters, as recognised by act of parliament. It was then moved that he should be allowed counsel; but this motion was overruled, upon the ground that no counsel could be permitted to plead against the privileges of the house. It was, however, carried that the lord mayor's clerk should attend with the book of minutes; and, notwithstanding all opposition, he was obliged to expunge from it the recognisance of Whittam the messenger. This was followed by a resolution that there should be no more proceedings at law in the case; upon which a vehement altercation ensued, and several of the minority at last left the house in the utmost rage. Though it was now one o'clock in the morning, the ministerial party refused to adjourn, and proceeded to the case of Mr Oliver, who, like the lord mayor, declined to express any regret for what he had done. Some proposed to censure his conduct, others were for expulsion; but when it was proposed to send him to the Tower, the utmost confusion took place, some members declaring that they would accompany him to the place of his confinement, whilst others left the house. Meanwhile ministry used their utmost endeavours to persuade him to make some kind of apology or concession for what he had done; but finding him immovable, they at last carried the motion for his imprisonment, and he was committed accordingly. After the confusion had been in some measure dispelled, the debates concerning the lord mayor were resumed, and many arguments were urged against proceeding further in the matter; but these being disregarded, the minority left the house; and his lordship refusing the favour offered him of being committed to the custody of the serjeant at arms, was sent to the Tower. Alderman Wilkes, on being ordered to attend, wrote a letter addressed to the Speaker, in which he observed, that no mention had been made of his being a member; and that if his seat in parliament, to which he had been duly elected, was to be granted, he would attend and justify his conduct. Administration, however, were too wise again to encounter this demagogue; but being at the same time under no little embarrassment how to get off, they at last had recourse to the miserable shift of ordering him to attend on the 8th of April 1771, while they adjourned the house to the 9th.

The only other transaction of moment during this session related to the East India Company. It was now proposed to raise two thousand men in England for the service of the Company, by whom the officers appointed by the king were to be paid. But it was considered as unconstitutional and dangerous to keep up an armed force in the kingdom which was not paid by government; and it was likewise urged that it would prove an obstruction to the recruiting service of our own army, on account of the

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The many defeats which had been experienced by opposition during this and the preceding sessions now began to cool their ardour in the cause of patriotism. Many of them also had lost much of their popularity by taking part against the printers; and as every motion had been carried in favour of administration by nearly two to one, a general discouragement and languor ensued. The only gainers indeed by the late contentions were the city magistrates, and printers who had been punished by the House of Commons. On the rising of parliament, the lord mayor and aldermen were of course released from the Tower, and welcomed with every mark of congratulation. The city was illuminated; and the mob, as usual, took vengeance on the refractory by breaking their windows. A committee was even appointed to carry on a prosecution against the Speaker of the House of Commons; but as this did not seem likely to afford redress, they determined once more to have recourse to the throne. Accordingly, on the 10th of July 1771, another petition and remonstrance was presented, the subjects of which were the embankments on the Thames, the proceedings against the magistrates, and a request for a speedy dissolution of parliament. But this met with as unfavourable an answer as any of the preceding appeals to the sovereign.

In the speech from the throne, when the parliament assembled in January 1772, his majesty observed, that the performance of the king of Spain's engagements, and the behaviour of the other European powers, promised a continuance of peace, and that although the necessity of keeping up a respectable naval force was evident, yet no extraordinary aid for that purpose would be necessary; and he concluded with recommending a vigilant and active attention to the concerns of the country, with an assurance of the interposition of the crown to remedy abuses or supply defects. Little discussion took place on the address in answer to this speech; but an ample subject of altercation was soon furnished by a motion on the part of the government, the object of which was to recognise the necessity of raising twenty-five thousand seamen for the service of the current year. A proposition of this kind, coming immediately after the assurances of peace that had been given from the throne, seemed very like a contradiction. Accordingly it was argued that the peace establishment would thus be augmented till we were overburdened by it; that a large sum would be added to the national expenses; and that as the same augmentation might every year be made on similar pretences, the nation would in this way be obliged to submit to the hardships of war in a time of profound peace. If the assurances of peace from the throne were well founded, the force in the East Indies was already too great; if, on the contrary, a war was at hand, it would be too small, notwithstanding the proposed augmentation; and in the same way Jamaica was likely to suffer from this inferiority. But these remonstrances were by no means sufficient to put a stop to the measure; and the question in favour of the augmentation was carried without a division.

The subject which came next to be discussed was religion. This was originated by the tendency which had for some time prevailed to resist the subscription of the church standards. Meetings had been frequently held by discontented members, in order to consider of some mode

of relief; and in the beginning of February a number of them, with several professors of law and physic, joined in a petition to the House of Commons, expressing their dissatisfaction with subscription to any human forms, and praying for relief. In this petition they asserted that they held certain rights and privileges from God alone, without being subject to any other authority; that they accounted it a blessing to live under a government which maintained the sufficiency of the Scriptures to instruct in all things necessary to salvation; and that they had a right from nature, as well as from the principles of the reformed religion, to judge for themselves what was or was not contained in the Scriptures. They prayed therefore to be relieved from the burden of subscription, and to be restored to their undoubted right of interpreting Scripture for themselves, without being bound by any human explanation of it, or being required to acknowledge the truth of any formulary of religious faith and doctrine whatsoever, excepting the Holy Scripture itself. This petition was presented by Sir William Meredith, who, along with the other members favourable to the cause, enforced it by many arguments drawn from the principles of toleration, and maintained that nothing but hypocrisy and prevarication could arise from obliging men to subscribe what they did not believe; that the repeal of the laws for subscription would prevent the increase of dissenters, and incline many of them to return to the church; that the articles themselves were originally compiled in a hurry; that they contained doctrines highly controvertible; and that this restraint on the consciences of men constituted one of the greatest imaginable hardships. The majority of parliament, however, were found inimical to the petition, though some who then opposed it wished for time to consider it more deliberately, or to refer it to a committee of the clergy. At last, however, it was thrown out by a large majority.

The rejection of the subscription bill was followed by that of a bill for guarding the possessions of his majesty's subjects against dormant claims of the church. After this the attention of parliament was called to one of the utmost importance, which had been introduced by a message from the king. This was the famous royal marriage bill, occasioned by the marriage of the Duke of Cumberland with Mrs Horton, a widow lady, daughter of Lord Irnham, and sister to Colonel Luttrell, and that of the Duke of Gloucester with the countess-dowager of Waldegrave. By the message it was recommended to both houses to take it into their consideration, whether it might not be expedient to supply the defects of the laws then in being, and by some new regulations more effectually to prevent the descendants of his late majesty,—excepting the issue of the princesses who had married, or might hereafter marry, into foreign families,—from marrying without the consent of his majesty, his heirs and successors. In consequence of this a bill was brought in, declaring all such marriages, without the consent above mentioned, to be null and void. The descendants of his majesty, however, if above the age of twenty-five years, might marry without the royal consent, provided they gave intimation twelve months beforehand to the privy council, and no opposition to the match was made by parliament during that interval. But this bill encountered the most violent and powerful opposition. The principal arguments against it were, that the immediate tendency of the measure was to create as many prerogatives in the crown as there were matters of importance in the state, and to extend them in a manner as exceptionable as had ever been done in the most despotic period; that the enacting part of the bill had an inconvenient and impolitic latitude, in extending to all the descendants of George II.; that the time of nonage for the royal family

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appeared to be improperly extended beyond the limit of twenty-one years; that the deferring their marriage to the age of twenty-six might also be attended with bad consequences, by driving them into a disorderly course of life; that the power given by this bill to a prince to marry after the age of twenty-six was totally defeated by the proviso which declared the consent of parliament to be ultimately necessary; that the right of conferring a discretionary power of prohibiting all marriages, was beyond the reach of any legislature whatsoever, being contrary to the inherent rights of human nature, which, as they are not derived from, or held under, the sanction of any civil laws, cannot in any case be taken away by them; that this bill had a natural tendency to produce a disputed title to the crown; and that it provided no security against the improper marriages of princesses into foreign families, and those of their issue, which might as materially affect the interest of this nation as the marriages of princes residing in the dominions of Great Britain. To these arguments it was answered, that the inconveniences so much talked of were merely imaginary; that if the king should make any improper use of his authority, parliament had it in their power either to prevent the consequences, or to punish the minister who advised it; that the crown was dishonoured by improper connections; that many of the greatest national calamities had proceeded from improper alliances between the royal family and subjects; and that if experience showed that any material grievances ensued from this act, it could as easily be repealed hereafter as thrown out now, and on much better grounds. The result was, that with great rapidity, and by considerable majorities, it passed through both houses.

Though the decision concerning the subscription of the thirty-nine articles did not promise much success to any proposed innovations in matters of religion, yet the case of dissenting ministers was introduced soon after the discussion of the royal marriage act; and a petition was presented by a great body of dissenters, praying to be relieved from the hardship of subscribing to the articles of a church to which they did not belong. This, however, was most violently opposed, though with very little success, in the House of Commons, where it was carried by a very great majority. In this branch of the legislature it was maintained that nothing can advance the true interest of religion so much as toleration; and that if articles of subscription are necessary, it must only be for men destitute of principle, who, in compliance with ambition or avarice, would as readily subscribe one set of articles as another. In the House of Lords, however, the bill was rejected by a majority of seventy. Here the doctrine of universal toleration was vehemently scouted, and much was said of the danger to which the Church of England would be exposed by departing from the laws which guarded its privileges. The dissenters, it was alleged, had great cause to be satisfied with the favour they enjoyed by connivance; and the laws were only kept on record as a necessary curb, lest, in the degeneracy of a declining kingdom, religion should require protection against heresy and blasphemy.

The only other business of this session was an attempt at inquiry into the affairs of the East India Company, which were then in a very critical situation. But the subject did not come under consideration till next session, which commenced in November 1772; the situation of the affairs of the Company being alleged as a reason why parliament had been called together sooner than usual. The greater part of the present session was accordingly occupied with the concerns of the Company.

It had been projected, as long ago as the year 1667, to bring them under the inspection of government; but the design did not succeed at that time, nor would it probably

have been entertained now, had not the affairs of the Company been embarrassed by the misconduct of their servants. During the preceding session a bill had been brought in for restraining the governor and council from all kinds of trade, as well as for enlarging the power of the Company over its servants; but the bill was thrown out on the second reading, and indeed had probably been introduced merely to pave the way for what followed. The debates on the subject, however, produced a general belief that the affairs of the East India Company were, owing to the behaviour of its servants, in a very bad condition; that at any rate it was insufficient for the government of such extensive possessions; and that, in consequence, there was an evident necessity for giving up the management of it to the Crown. A motion was accordingly made for a select committee to inquire into the affairs of the Company; and although many reasons were urged against the proposition, it was carried without a division, and the members were chosen by ballot. But during the recess the affairs of the Company continued to retrograde, and the treasury at home was quite exhausted; whilst bills to a vast amount drawn on Bengal were nearly due, and these, together with the Company's debt to the Bank and other public bodies, and the sum to be paid to government, reduced them almost to the verge of bankruptcy. They were therefore reduced to the necessity of asking a loan from administration; but their application was received with great indifference, and the minister desired them to apply to parliament. Meanwhile the reports of the select committee were published, and gave the public no very favourable opinion of the behaviour of the Company's servants.

On the meeting of parliament, the minister moved for a secret committee, to consist of thirteen persons, and the members of which were to be chosen by ballot, in order that no objection might apply to them which did not militate equally against the whole house. This motion encountered some opposition; but, ultimately, the committee of secrecy was carried, as the other had been, without a division; and the members, though chosen by ballot, were almost all of them devoted to administration. The select committee was likewise revived, that these bodies might act as checks upon each other, and that between them the nation might have the requisite information respecting the whole matter.

In a short time after the appointment of the secret committee, a report was given in, stating that the Company were in great distress for want of money; and that a bill ought to be brought in for restraining them from sending out supervisors to India, a scheme which they at this time meditated. The minister and his adherents enlarged greatly on the utility of this bill, which they described as not only highly expedient, but absolutely necessary, in order to prevent the Company from engaging in an expensive commission, at a time when their affairs were so much embarrassed that they had no resource but to apply to government for a loan. But notwithstanding all the arguments used by administration in favour of the bill, the Company were so far from thinking it for their advantage, that they used every endeavour to prevent its passing into a law. They petitioned, and some of their servants were examined in the House of Commons, in order to show the necessity of sending out supervisors, qualified to bring their affairs into some degree of order, and at the same time capable of curbing the excesses of which the Company's servants had too frequently been guilty. In spite of all opposition, however, the bill was carried by a large majority; and in the House of Lords it met with similar success, although the minority thought proper to enter a protest.

The select committee now gave in their second report, containing a statement of the debt, credit, and effects of

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The next step was to deprive the Company of their territorial right to the countries which they possessed in the East Indies. This had been allowed them in the most explicit manner, as appears by some of the papers which passed between the French and English ministers during the negotiations that issued in the treaty of Paris; but Lord North informed the house that it was the opinion of several great lawyers, that such territorial possessions as the subjects of any state shall acquire by conquest are virtually the property of that state, and not of those individuals who acquire them. He was of opinion, however, that it would be more beneficial for the public and the East India Company, to let the territorial acquisitions remain in the possession of the Company for a limited time; and at the same time it was moved, that no participation of profits should take place betwixt the public and the Company until after the repayment of L.1,400,000 advanced to the Company, and the reduction of the Company's bonded debt to L.1,500,000; that, after the payment of the loan advanced to the Company, and the reduction of their bonded debts to the sums specified, three fourths of the net surplus profits of the Company at home, above the sum of eight per cent. upon their capital stock, should be paid into the exchequer for the use of the public, and the remaining fourth be set apart either for reducing the Company's bonded debt, or forming a fund for discharging any contingent expenses to which the Company might be exposed.

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This concession in favour of the East India Company proved in the event the loss of the American colonies; nor indeed could these arbitrary proceedings with so considerable a body tend to impress the mind of the nation with ideas favourable to the views of administration. In other respects the minister abated nothing of the disposition he had from first to last evinced with regard to the Company. On the 3d of May 1773 certain resolutions were laid down by him as the foundation of a bill to establish certain regulations for the better management of the East India Company, as well in India as in Europe. These were, that the court of directors should in future be elected for four years; that no person should vote at the election of the directors who had not possessed his or her stock twelve months; that the stock qualification for the future should be L.1000 instead of L.500; that the mayor's court of Calcutta should henceforth be confined to small mercantile causes; that, instead of this court, a new one should be established, consisting of a chief justice and three puisne judges, appointed by the crown; and that a superiority should be given to the presidency of Bengal over the other presidencies in India. Each of these resolutions was carried by a great majority. By the friends of the Company, however, the bill was supposed to have a tendency to effect a total alteration of its constitution in England, as well as in the administration of all its presidencies in Asia, and to subject their affairs, both at home and abroad, to the immediate power of the crown. By cutting off the L.500 stockholders, the proprietary would become more manageable by the crown; nor was there any security that the directors would be faithful to the interests of the Company when they were no longer responsible to them for their actions. This class of proprietors presented a petition, which gave rise to a motion, bearing that the petitioners had not been guilty of any delinquency in the exercise of their chartered rights according to the several acts of parliament made in their behalf. But the motion was rejected, and the regulating bill passed both houses by large majorities.

During this time the select and secret committees were pursuing their inquiries. The affairs of the Company were investigated from the year 1756, and a report was at length presented by General Burgoyne, containing many charges of cruelty and rapacity, against several persons concerned in the management of the affairs of the Company, particularly with regard to the deposition of Surajah Dowlah in 1756, which was described as the cause of all the evils which had since happened. The report dwelt much on the treachery employed in bringing about that revolution, particularly the fictitious treaty with Omichund; and exposed the conduct of Lord Clive, who had caused Admiral Watson's name to be affixed to the treaty, after the admiral himself had refused to sign it. It concluded with moving for the restitution of all the money received in presents or otherwise in India whilst the receivers acted in public capacities; and recommended the adoption of resolutions, bearing in substance that all acquisitions made under the influence of a military force, or by treaty with

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foreign powers, belong of right to the state; that to appropriate acquisitions obtained by such means is illegal; and that great sums of money had been obtained by such means from the sovereign princes in India. The belief that many of the Company's servants had acted in an infamous manner, was at this time so general and so strong, that these resolutions were carried almost unanimously. Lord Clive defended himself by general protestations of innocence, which, however, gained but little credit; and when he entered into a particular refutation of the charges against him, he did not succeed in making many converts to his reasoning. But his friends were not of opinion that the charges were of a very atrocious nature, and wished to excuse him on the ground of policy and necessity. The treaty with Omichund was justified on the plea of necessity. Some, indeed, observed that as Omichund had the character of being the most accomplished villain in Asia, the Englishman merely wished to have a trial of skill with the Asiatic. This sarcasm, however, was a mere piece of wit, without any solid foundation; for the crime, if there was any in the transaction, lay in dethroning a sovereign prince by means of traitors, and not in cheating the traitors out of their reward. And, in fact, if treachery be once admitted into transactions, whether civil or political, it is in vain to pretend any subjection to the rules of justice; for those who call in the aid of such an auxiliary are already beyond its jurisdiction. General Burgoyne, however, moved that Lord Clive had, in consequence of the powers with which he was vested in India, received at various times presents to the amount of L.234,000 sterling, to the dishonour and detriment of the state. But this being rejected, after a violent debate, it was moved that Lord Clive, in receiving such a sum, had abused the power with which he was intrusted, to the evil example of the servants of the public. This motion, however, was also rejected, and it was ultimately voted that Lord Clive, when he received the sum above mentioned, at the same time rendered great and meritorious services to his country. Thus the matter was concluded, and thus the affairs of the Company were delivered into the hands of administration.

The affairs of the East India Company, which had engrossed so much time and attention, now gave place to those of America, which by this time had assumed a very lowering aspect. The discontent occasioned by the taxes imposed on that country has already been noticed. The stamp act had excited among them a spirit of industry and economy, as well as a desire of providing themselves with manufactures of their own, which had not been foreseen. At the time, as well as afterwards, this was imputed to wilfulness, or to the discontent of a few, which would afterwards subside, or be suppressed by the voice of the majority, when things would revert to their former channels. But the trifling tax on tea, which had not been repealed, and the permission given to the Company to export whatever quantity they pleased, now threw matters into a ferment not to be quelled by any means whatever. Of the various proceedings in America, the tumults at Boston and elsewhere, the accidental circumstances which added fuel to the flame, and the war which ensued and ultimately terminated in the recognition of American independence, an account will be given under the article UNITED STATES. It is only necessary here to give an account of the manner in which the legislature and people of Great Britain were affected by these events.

Ever since the conclusion of peace in 1763, the disposition shown by government to augment the revenue had produced in the popular party of Great Britain a spirit similar to that manifested by the Americans, though in an inferior degree; and hence the patriots of Britain affected to consider the Americans as oppressed by government, and

suffering in the same cause with themselves. The wanton destruction of the tea at Boston and other places in America, however, considerably diminished the number of their friends, and rendered many of those who still adhered to them much less sanguine in their cause. The matter was announced to parliament by a special message from the throne. Lord North and the other ministers described the conduct of the colonists, particularly in the town of Boston, as most atrocious, and concluded that government was now perfectly justified in resorting to any measures they might think proper to repress the turbulent spirit which had been manifested, and inflict such punishment as the enormity of the offence seemed to deserve. The opposition did not pretend to exculpate, though it still attempted to excuse, the conduct of the colonists, by ascribing all the disturbances in that country to the arbitrary and absurd measures pursued and obstinately adhered to at home. But the ministry evaded this charge by drawing the attention of the house to the more important consideration, whether the Americans were now to be dependent on, or independent of, Great Britain. The Boston port bill was then brought in, and carried, but not without considerable opposition, both within and without doors. Mr Bolla, agent for the council of Massachusetts Bay, founding on an act of Queen Elizabeth, for securing the liberty of the colonies, drew up a petition, and caused it to be presented before the bill had actually made its appearance: but so little regard was paid to it, that, during the time it lay on the table, the bill was brought in by Lord North. After the second reading, the same gentleman presented another petition, desiring to be heard in behalf of the town of Boston, and for the council of Massachusetts Bay; but this was refused, because, although Mr Bolla was agent for the colony, he was not so for the corporation of Boston, and still less for the council of Massachusetts Bay, as the body which had appointed him was now no longer in existence. This appeared very inconsistent to many of the members, and produced a new petition from the lord mayor, in the name of such natives and inhabitants of North America as at that time resided in London, in which the petitioners insisted that the bill was illegal, unprecedented, unjust; and that, after such a precedent as it went to establish, no man or body of men in America could have a moment's security. But as little regard was paid to this as to the former petitions, and the bill passed both houses without a division. That this obnoxious bill might not be sent to America without some mitigation, however, the minority, who had not chosen to divide formally on the first measure proposed by government for reducing the refractory colonists, proposed the repeal of the duty on tea laid on in 1767; but this was also rejected, probably from an erroneous impression that the opposition of the Americans was that of a mere tumultuous mob, and that by showing proper spirit the ministry would at last come off victorious.

The extreme pertinacity shown by ministers, in this instance, undoubtedly proved highly prejudicial to their cause, both by exasperating the Americans, and by rousing the indignation of the minority in parliament, and rendering opposition more violent and determined. This appeared in every subsequent proceeding relative to the colonies. Even the bill for regulating the government of Massachusetts Bay did not pass without a protest; and a similar result ensued on the passing of the act for the impartial administration of justice. The opposition made to the Quebec bill was even more violent, inasmuch that, ere it could be carried, the ministers were obliged to lower the high and aspiring tone to which they had accustomed themselves in talking of American affairs. The minority contended, that without any necessity pleaded,

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Geor III. by act of parliament to that province; they likewise argued in favour of the method of trial by jury; and they thought that the establishment of the Roman Catholic religion in that country gave it a preference over the Protestant, which was henceforth to be exercised only by toleration.

At the conclusion of the session his majesty declared himself satisfied with what had been done, and expressed his hopes that good effects would result from the new regulations. The reception which they met with in America will be related in the proper place; in Britain the people seemed to await the event with indifference. The parliament in the mean time was dissolved by proclamation, and a very short time allowed for the election of new members; so that if opposition at that time possessed any strength, they were not allowed sufficient time to exert it.

The new parliament met on the 30th of November 1774, when his majesty informed the two houses that a most daring spirit of resistance still prevailed in America, notwithstanding the means which had been taken to prevent the mischiefs thence arising; and assured them that they might depend on his firm resolution to withstand every attempt to weaken or impair the supreme authority of the legislature over all the dominions of the crown. In answer to the speech from the throne, the minority demanded a communication of all letters, orders, and instructions, relating to American affairs; but this was overruled, and the address being carried as a matter of form, the consideration of American affairs was delayed until after the holidays.

In the beginning of 1775 the minority received a considerable accession of strength by the return of Lord Chatham, who, after a long absence, again made his appearance in parliament. He now testified in the warmest terms his disapprobation of the measures which had been pursued regarding America; he moved for addressing the king to recall the troops from Boston; he predicted, that if ministers persisted in the course they had for some time pursued, they would make the crown not worth the king's wearing; and he declared that the kingdom would be undone if measures of undue coercion were employed. But all the eloquence of this great man proved ineffectual; administration were determined upon reducing the Americans to subjection, and his motion was rejected by a very large majority. Lord North now presented the papers which had been called for by the minority; but lest the publication of particular names should prove detrimental to individuals, only such parts as administration thought proper for public inspection were laid before the house. This was complained of, but to no purpose; and the papers, in their mutilated state, were laid before a committee of the whole house.

In the mean time, petitions against the adoption of coercive measures against America had been received from most of the trading companies in the kingdom; and as these, though highly displeasing to administration, could not be absolutely thrown overboard, a committee was appointed to consider them; but this was not to take place until American affairs were also considered. The reason given for this method of proceeding was, that the consideration of commercial matters ought not to interfere with those of a political kind, each of them being sufficiently embarrassing without the other. The delay in hearing these petitions, however, was supposed to be in effect an absolute rejection of them; and so indeed it proved, the committee to which they were consigned being humorously styled the "Committee of Oblivion." The merchants of London, however, being determined not to give up the point until they had exerted themselves to the utmost,

drew up a paper, in which they denied the distinction established by ministry, and affirmed that the connection between Great Britain and America was chiefly of a commercial nature, and that the manifold regulations adopted for the mutual prosperity of the colonies and of the mother country formed the great political chain which united them to one another. This remonstrance was vigorously seconded by the opposition; but the administration had already determined on the line of conduct they were to pursue, and therefore wished to hear as little as possible on the subject. War was now the word; and although no weightier reason could be given for disregarding what the merchants had to say, this was the motive which impelled ministers to refuse them a hearing, lest these should make it appear that the nation was unwisely precipitated into such a measure.

But though there is no reason to doubt that administration were now fully determined upon a war, and therefore wished to be troubled with as few objections as possible, they were by no means deficient in arguments in justification of their own conduct. They alleged that the petitions so strongly pressed on the attention of the house were principally the work of a factious party; that the advantages resulting from the trade with America arose from the dependent condition of the colonies, which now aimed at shaking off entirely the supremacy which the mother country had hitherto exercised over them without the smallest complaint; that the advantage of the merchants themselves was consulted in maintaining that supremacy; that they would be the first to feel the pernicious consequences of its being lost; that war, though no doubt a great evil, was sometimes necessary to prevent a greater; that were the government to yield in the present contest, no advocate of America could pretend to say what would be the last of its demands; that the Americans were not to be reclaimed by concessions; that the honour and character of the nation were at stake; and that Britain had often taken up arms for matters of less consequence, and should not now hesitate where honour and interest both called for the most vigorous and effective exertions.

These arguments prevailed, and the motion in favour of the merchants' petitions was rejected by a prodigious majority. This point, however, had no sooner been disposed of, than a violent debate arose concerning the petition of congress to the king, which had been referred to parliament. It was argued by administration, that no petition could be received from the continental congress, which was not a legal body; that it would be admitting their legality to receive a petition from them; and that the general assemblies and their agents were the only lawful representatives of the colonies, and could alone be recognised as such. Opposition disputed these positions, but to no purpose; for, after an ineffectual struggle, the petition was rejected by a very large majority.

In the mean time a conciliatory plan, prepared by the Earl of Chatham, was presented on the first day of February 1775. The declared object and intent of this bill was to settle the troubles in America, and at the same time to assert the supreme legislative authority and superintending power of Great Britain over her colonies. No taxes were to be levied in America, but with the free consent of their assemblies. The right of the crown to station and maintain a military force established by law in any part of its dominions was pointedly asserted; but it was also declared, that it could not be legally employed to enforce implicit and unlawful submission. A congress was also to be held, in order to recognise the supreme sovereignty of Great Britain over the colonies, and to settle an annual revenue upon the crown, disposable by parliament, and applicable to the exigencies of the nation.

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And on these conditions being complied with, the acts complained of by congress were to be suspended, with every other measure pointed out as a grievance, and the constitution of the different governments to remain as settled by their charters. This bill, however, was deemed totally inadmissible, on account of the various concessions it enacted, and particularly from its empowering the colonies to assemble in congress; a measure which was at that time the most offensive, and supposed to be the most injurious to the interests of Britain. Lord Chatham showed no deficiency of argument in support of his favourite scheme; but his reasoning, though enforced with all the powers of his eloquence, proved unsuccessful, and the proposal was ultimately rejected.

A petition was next presented to the House of Commons by the proprietors of estates in the West India islands, representing their alarm at the association of the Americans, and the intended stoppage of trade with the British islands, the situation of which, it was alleged, would be very calamitous, if the acts in question were not immediately repealed. To the administration, however, all petitions now appeared to be the contrivance of faction; but as it was deemed necessary to inform the nation as to the ultimate views of the government respecting America, Lord North, in a long speech, enumerated the most remarkable circumstances relating to the dispute with that country. He affirmed that the ferment then prevailing in America proceeded from the unwarrantable arts and practices used to inflame the people against the ruling powers in Britain; that, notwithstanding all their complaints, the public charges borne by individuals in America were not more than as one to fifty, compared with what was paid by individuals in England; that nothing but a settled determination to quarrel with the parent state could induce the Americans to persist in their disobedience to the lawful injunctions laid upon them, and which were neither injudicious nor oppressive; and that a spirit of resistance, not discontent at oppression, animated America. For these reasons he proposed to the house to send a greater force to America; and to pass a temporary act, suspending all the foreign trade of the different colonies of New England, and particularly the Newfoundland fishery, until they consented to acknowledge the supreme authority of the British legislature. New England was singled out upon this occasion, as being accounted the most guilty. The others, it was hoped, would yield with less compulsion; but the question now was, whether this country should at once abandon all claims on the colonies, and instantly give up the advantages arising from our sovereignty, and the commerce dependent on it, or whether it should resort to the measures which had become indispensably necessary to insure both.

An address was now carried, which, by the showing of opposition, amounted to a declaration of war. The consequences, therefore, were pointed out with the utmost freedom, and some even denied the charge of rebellion fixed on the province of Massachusetts Bay. The people there, they said, had done nothing but what the constitution allowed; they had resisted arbitrary measures; and the examples so frequently set them at home were sufficient to justify their conduct. The address, however, was carried as usual by a large majority. But so important was the subject of it deemed by the minority, that a motion was made for recommitting it, on account of the consequences that might probably result from the prosecution of the measures recommended. A very long and violent debate ensued, in the course of which the administration contended as usual for the necessity of enforcing obedience by the sword. The Americans, they said, had become incorrigible through forbearance; lenity was a subject of

derision among them, and was imputed to imbecility and fear; they imagined themselves able to abolish the sovereignty of Britain in that country, and were now resolved to do it. It was therefore incumbent on every native of Britain in such a case to stand forth and vindicate the interest and glory of his country; and it was the duty of parliament and ministry to call forth the whole spirit of the nation to a contest in which every thing dear to them, both in their public and private capacities, was so deeply concerned. The views and principles of ministers were attacked in the most violent manner. They were said to be reviving the old exploded doctrines of hereditary right and passive obedience, and requiring the Americans to submit unconditionally to the will of Great Britain, for no other reason but because she was the parent state. But if no better reason could be produced, they could not be justly blamed for their disobedience. The ties between Great Britain and her colonies, however, were of a far more noble as well as more binding nature than even origin and consanguinity. These ties were the constitution transmitted from Britain, and the brotherly assistance hitherto afforded them by Englishmen, and which ought to render the name dear to them. While these ties remained unviolated, there was no room to complain of their behaviour; but they would never submit to despotic authority in Englishmen more than in any others. Such unwarrantable principles rendered it no longer a question whether the measures of administration should be considered, but whether the ministers themselves ought not to be deprived of the power which they exercised so unconstitutionally. The question was not now between Great Britain and America, but simply whether we should give up our colonies or our ministers. This kind of language excited the indignation of the ministerial party, who in return charged minority in plain terms with the guilt of all that had happened. There had gone forth, it was said, a factious and republican spirit, by which every person who wrote or spoke on the American cause was actuated, and which had not only induced the Americans to commence a rebellion against the parent state, but had filled the house with incendiaries. The final issue of the dispute was, that the recommitment of the address was lost by a majority of more than two to one. The debates were the most violent that had ever been known in the British parliament; and so important was the subject reckoned, that not only the people of this country, but even the foreign ministers in London, watched the motions of administration with the utmost anxiety.

But all these victories were not sufficient to prevent new enemies from starting up. Petitions had been preparing by the London merchants trading to America, and by those concerned in the West India trade, in order to be presented to the House of Lords. This task was undertaken by the Marquis of Rockingham; but he was prevented from executing it by a previous motion in favour of the address. A long and violent debate, however, ensued concerning the necessity and propriety of receiving them; but it was at length resolved that the petition could not be received consistently with the interest of the kingdom.

In the mean time matters became daily worse in New England; and it was soon perceived, either that the friends of government in that colony did not exert themselves, or that they were far from being so numerous as had been imagined. In order to render their coercive plan the more effectual, therefore, it was judged necessary to extend it so that every individual of the colony might become sensible of the punishment. This, it was supposed, would be done by a bill for restraining the four provinces of New England from commerce with Great Britain, Ireland, and

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CHAP. XIII.

REIGN OF GEORGE III.—AMERICAN WAR.

Force to be sent to America.—Lord North's conciliatory Bill.—Ineffectual endeavours of the West India Planters.—Violence of both parties.—Resignation of Lord Effingham and others.—Conduct of London and Dublin.—Distress of the Country.—Last petition of Congress rejected.—Whigs and Tories.—Their mutual recriminations.—Misfortunes of the Newfoundland fleet.—Difficulty of procuring succours.—France and Holland espouse the American cause.—Hessian auxiliaries.—Supplies for the garrison of Boston destroyed or taken.—Party animosities.—Debates in Parliament.—Military operations.—The cause of America believed to be desperate.—Expense of the war.—Surrender of Burgoyne at Saratoga.—Conduct of Ministers.—The French resolve to assist America.—Treaty between France and America.—Charges against administration.—Invasion threatened by the French.—Exploits of D'Estaing in the West Indies.—Encounter with Admiral Byron.—State of the Contest in America and the West Indies.—Condition of the British Navy.—Keppel's engagement with the French fleet.—Subsequent dissensions, and trial of the Admiral.—His acquittal.—Board of Admiralty attacked.—Resignations of Admirals Keppel, Howe, and others.—Inquiry concerning the conduct of the American war.—General Burgoyne's affair.—Accession of Spain to the confederacy against Britain.—Measures for the defence of the

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The final resolution to reduce the colonies by force being now taken, it became necessary to make proper preparations for the purpose; and in this the conduct of administration was little less censured than in other respects. As the opinion that the Americans were naturally timid, and incapable of becoming soldiers, prevailed greatly at this time, a force of a thousand men was judged sufficient to reduce the province of New England to obedience. The project of ministers was vehemently opposed by the minority. They insisted that the force was totally inadequate, and only calculated to produce expense to no purpose. The first impression, they very justly observed, ought, if possible, to be decisive; and in order to render it so, it was necessary to send such a fleet and army as might insure the confidence of the public, and be certainly capable of surmounting all obstacles. Many of the friends of administration were of the same sentiments; and the only reason assigned for acting otherwise was founded on a hope that the Americans would, upon more mature consideration, desist from their opposition. That they might the more readily be induced to this submission, Lord North's conciliatory proposition was formed, by which it was enacted, that when the governor, council, and assembly of any of the colonies, should propose to make a provision for the common defence, and when such provision should be approved of by the king in parliament, the levying or imposing of taxes on that colony should then be forborne; those duties excepted which it might be expedient to impose for the regulation of commerce; and the net produce of which should be carried to the account of the colony where it had been raised. But this proposal, though highly extolled by the friends of administration, was no less reprobated by the minority than the others had been. Nevertheless, after a lengthened debate, the question was carried in favour of administration by a majority of more than three to one.

A similar fate attended a petition to the throne from the island of Jamaica. Instead of relaxing any thing of their severity, the ministry now included the southern colonies in the restrictions imposed on New England. Still, however, the petitioners were indefatigable in their endeavours.

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vours to be heard. The West India merchants and planters seconded their last petition by entering into a lengthened detail of circumstances relating to the British islands in that part of the world. This affair was conducted by Mr Glover, a gentleman celebrated for his literary talents and commercial knowledge. From his investigations it appeared that, exclusive of the intrinsic worth of the islands themselves, their stock in trade and other property amounted to no less than sixty millions; that the exportation to Britain had of late been near two hundred thousand hogsheads and puncheons of sugar and rum, amounting to no less than four millions in value; and that the direct revenue arising from this source was seven hundred thousand pounds, besides that which accrued from the collateral branches depending upon it. These arguments, however, were urged in vain. Conciliatory proposals were made by Mr Burke and Mr Hartley, but they were rejected by great majorities, and instead of serving the cause they were meant to promote, had the very opposite effect. A dread was entertained of the consequences which might ensue from the republican opinions now so prevalent in the colonies; and all partiality towards them was looked upon in so criminal a light, that their opponents became deaf, on many occasions, to the voice of reason and humanity when urged in their behalf. On the other hand, the favourers of America, urged on by a furious zeal, if not resentment, against those whom they looked upon as the promoters of arbitrary measures, erred equally in their opposition to ministry. And this violence of party spirit appeared not only among the people at large, but broke forth with the utmost fury in parliament, where the debates often resembled the railings of Billingsgate more than the deliberations of the representative assembly of a great and powerful nation.

In this temper of mind the state of affairs was scarcely ever truly represented by either party. Government continued to enact new laws, now in vain, against the Americans; whilst their antagonists opposed them in a manner so little different from that which has been already related, that any further account of the debates would be equally tedious and unnecessary. Other petitions were also presented, and treated with neglect. The union of the colonists, and their preparations for war, were described by the ministerial party as the mere commotions of a headstrong mob, but represented by the opposition as an association of an injured and virtuous people, who were about to found a mighty empire in the west, whilst Britain was doomed to sink into utter disgrace and contempt by their secession. In the same way, the event of the skirmish at Lexington, where the first blood flowed in the contest, was magnified by the one party into a disgraceful defeat, and treated by the other as a trifling affair, to which no regard whatever ought to be paid, far less any inference drawn as to the fate of the war. The battle of Bunkers' Hill, and all the transactions of the year 1775, were in like manner exaggerated by both parties, though in opposite directions; and the consequence of these misrepresentations was to fan the flame of mutual resentment.

Whilst these altercations continued to agitate the minds of the superior classes of people in Britain, the middle and lower ranks remained in a kind of indifference, or rather were opposed to the proceedings of ministry. This opposition, indeed, had no influence on the councils of the nation, but in other respects it proved exceedingly troublesome. The levies were obstructed, and the recruiting service was never known to go on so heavily; numbers of that description of persons who usually fill the ranks of the army not only refusing the usual offers, but even reproaching loudly the cause in which they were solicited to engage. Several officers of high rank also showed a dis-

inclination to the service. Lord Effingham, who had distinguished himself by his opposition to the ministerial measures, resigned the command of his regiment rather than fight against the cause which he had so warmly espoused; and his example was followed by that of several other officers. For this step Lord Effingham received the thanks of the cities of London and Dublin, both of which were extremely averse to hostilities with America; and the former, indeed, could scarcely restrain itself within any bounds of moderation. After the skirmish at Lexington, the city framed a remonstrance and petition, animadverting severely on the ministry and parliament; and it was not without the greatest difficulty that the more moderate party procured a counter-petition, couched in less reprehensible terms.

In the mean time serious inconveniences, arising from the stoppage of trade, began to be felt in different parts of the nation. The suspension of the sale and purchase of negro slaves in the West Indies and in North America, and the prohibition against exporting arms and gunpowder, had seriously impeded the trade of Bristol and Liverpool with Africa; in consequence of which a great number of ships which had formerly sailed from these ports were laid up, and nearly three thousand sailors belonging to Liverpool were thrown out of employment. These distresses, however, made no impression on administration; who having once laid it down as a maxim, that the subjection of America was the greatest political good that could happen to Britain, were, in a conformity with their own principles, obliged to consider every disaster that might occur during the prosecution of this object as a temporary inconvenience, which ought not to be put in comparison with the execution of so great and necessary a design. But whatever might be the views of administration in this respect, it was far otherwise with the generality of the nation. They felt severely the present inconveniences; whilst the probable subjugation of America afforded no solid reason to hope for an equivalent or compensation. It was with the utmost satisfaction, therefore, that they received the news of Mr Penn's arrival in 1775, with another petition from the congress, to be presented to the king in the first instance, and then given to the public. But their expectations were speedily disappointed. The petition was delivered to Lord Dartmouth on the first of September, and in three days afterwards it was stated that no answer would be given to it. This laconic reply excited no small surprise, more especially as the language of the petition was respectful, and expressed a strong desire for peace and reconciliation; and hence it could only be considered as a formal and deliberate, if not insulting, renunciation of all friendly intercourse with the colonies.

The rejection of this petition served to inflame, more than ever, the mutual resentment of the adverse parties. The obsolete distinction of Whig and Tory was now revived, with such animosity, that Britain itself, as well as America, seemed in danger of becoming the theatre of war and bloodshed. The Tories were accused of promoting sanguinary addresses, misinforming the government, and circulating false representations, in order to add fuel to the flame already kindled, and produce civil war. They were also upbraided with their attachment to the Stuart family; their incessant machinations to involve the country in civil war; the dissension at home and disgrace abroad which had invariably attended their councils; and their indifference to the honour and interest of the nation, which, from the peace of Utrecht to the present time, they had ever been ready to sacrifice for the advancement of their party. On the other hand, the Tories described the Whigs as the genuine descendants and representatives of the republican incendiaries who, in the last century, had overturned the

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ign of constitution and desolated the kingdom; as pretending, indeed, to uphold the liberty of Britain, but, under this mask, as desirous of engrossing all the authority to themselves, and of exercising arbitrary power under a mock semblance of freedom. The real question however was, whether the king and parliament, when united, were to be obeyed or resisted. The Tories insisted that they should be obeyed, the Whigs that they ought to be resisted; and hence there were two parties in Britain, the one of which was of opinion that the colonies, owing obedience to Great Britain in all cases whatsoever, ought, in case of refusal, to be compelled to obey; whilst the other, though it acknowledged as a general principle the existence of the same obligation, deemed it inexpedient and impolitic to enforce it.

The violence of these bickerings, however, was somewhat allayed by serious commercial misfortunes, which occurred about this time, and added greatly to the difficulties with which the government had to contend. During the last session of parliament, it had been affirmed that the bill for depriving the people of New England of the benefits of the Newfoundland fishery would redound to the interest of Great Britain, by throwing into her hands the profits which were formerly divided with the colonies. But this prediction was belied by the event. The number of ships fitted out this year was scarcely greater than usual, and the congress had prohibited them from being supplied with provisions; so that not only those on board the ships, but even the inhabitants on the island of Newfoundland itself, were in danger of perishing from want. Many of the ships, therefore, were obliged to go in quest of provisions instead of prosecuting the employment on which they had been sent; and, on the whole, instead of any increase, the profits of the fishery suffered this year a diminution of near £500,000. Nor was this all. A storm of unprecedented violence occurred in these latitudes during the fishing season; the sea rose fully thirty feet above its ordinary level, and with such rapidity, that no time was allowed for avoiding its fury: upwards of seven hundred fishing boats perished; and several ships foundered, with their whole crews. Nor was the devastation confined to the sea; for the waters broke in upon the land and occasioned prodigious loss and destruction. By these misfortunes, the general stagnation of commerce, and the little success which had hitherto attended the British arms, the mercantile portion of the nation was plunged in despair, and petitions were poured in from all quarters.

But ministers had determined on their course; and the only question now considered was, how it might be most effectually put in execution. For this purpose, application was made to the petty states of Germany, which were wont to hire out their forces, and had frequently sent auxiliaries to Britain in former cases of exigency. But the scheme was fraught with difficulties, owing to the distance of the scene of contest, and the danger of mercenaries deserting a cause in which they had no manner of concern. The princes were also alarmed at the probability of losing for ever so many of their subjects; whilst the latter were not less startled at the prospect of being transported across the ocean into a new world, there to be exposed to all the miseries of war, with very little hope of ever again beholding their native country. Other resources were however devised, such as calling in the assistance of the Hessians, and obtaining from Holland the body of Scottish troops which had been so long in their service. But in these views administration were in a great measure disappointed. All the states of Europe looked upon Britain with an invidious eye; particularly Holland and France, the two powers who had most reason to hope for advantage from the quarrel. In Holland a very strong party contended warmly for the American interest; pamphlets were daily published at

Amsterdam in justification of the colonies, whose case was compared to that of the Netherlands in former times; and the colonists were exhorted to persevere in their claims against the pretensions of Britain, which was represented as insatiably covetous of wealth and power; as domineering and intolerable, especially since her successes in the war of 1755; and as arrogating if not exercising an absolute sovereignty over the seas. But although these powers thus early expressed their hostile disposition towards Britain, it was otherwise with the Princes of Hesse and Brunswick, by whom a considerable number of troops was furnished; and, that as many British forces as possible might be employed, large draughts were made from the garrisons of Gibraltar and Minorca, which were supplied with an equal number of men from the electorate of Hanover. The garrison of Boston was liberally furnished with all sorts of necessaries; and although the expenditure already began to occasion considerable alarm, and to raise a suspicion that even the treasures of Britain would not be able to defray the charges of the war, yet some countervailing advantages were derived from this profusion; for the price of every thing was augmented, including that of shipping; and although the profits realized by contractors and their numerous friends occasioned complaints, great benefit accrued to multitudes employed in the various branches of the public service. Misfortune, however, seemed to attend every scheme in which Britain engaged, although in the present case it must, in part at least, be ascribed to mismanagement. The sailing of the transports for Boston was delayed till the proper season was lost. They remained for a long time wind-bound; and when at length they were enabled to weigh anchor, they met with such stormy weather that they were tossed about in the Channel till most of the live stock which they had on board perished. Nor did the misfortunes of the convoy end here. After clearing the coast of England, their progress was retarded by a continuance of foul weather; they were driven by the periodical winds from the coast of America; and while some made for the West Indies, others were captured by American privateers, and only a very few reached Boston, with their cargoes so much damaged as to be of little or no use whatever.

With respect to the parliamentary proceedings of this period little can be said, except that every measure of administration, whether right or wrong, was keenly opposed. The employment of foreign troops, and the admitting of them into the fortresses of Gibraltar and Minorca, were severely censured, as being contrary to the bill of rights. But the administration contended that this bill only forbade the introduction of a foreign military power into the kingdom during peace, that the times however were not peaceable, and that the introduction of the troops was evidently with a view to quell a rebellion. The force designed for the conquest of America was then declared to be inadequate to the purpose; but it was replied, on the part of ministry, that the design was to conciliate, not to conquer; that twenty-five thousand men were sufficient to strike terror; and that though this should not instantly be produced, conciliatory offers would still be held out after every blow that was struck.

In the mean time the Americans, sensible of the dangerous situation in which they stood, exerted themselves to the utmost to dislodge the British troops from Boston, which they at length accomplished in March 1776. They then proceeded to put their towns in a state of defence, and repulsed Sir Peter Parker at Charlestown; but they did not exert themselves with equal spirit in the defence of New York, where, besides losing the town, they sustained such a defeat as seemed to threaten their affairs with total ruin. This in fact was the view taken of their situation by the

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generality of the people in Britain. The successful campaign of 1776 was looked upon as so decisive, that little room remained for supposing the Americans capable of ever retrieving their affairs. Opposition were much embarrassed, being almost reduced to the single argument about the interference of foreign powers; whilst the obstinacy of the Americans in refusing the offers of Lord Howe, even at the moment of their greatest depression, seemed a very bad omen. The ministry, however, now became so powerful, that whatever they proposed was immediately carried. The number of seamen for 1777 was augmented to forty-five thousand, and upwards of five millions were voted for the expense of the navy, and for discharging its debt. The expenses of the land service amounted to nearly three millions, besides the extraordinary of the former year, which exceeded one million two hundred thousand pounds; and though this vast provision was the subject of great complaint and animadversion, the power of ministry silenced all opposition.

But however administration might now triumph, their exultation was of short continuance. The misfortune of General Burgoyne at Saratoga threw the whole nation into a kind of despair, and reduced the ministry to the utmost perplexity. The great difficulty now was to contrive means for raising a sufficient number of forces to carry on the war; but from this embarrassment they extricated themselves by encouraging levies for government service by cities and private persons; and as the design was kept a profound secret before the Christmas recess, they were not disturbed by the clamours of opposition. The recess was purposely extended in order to give time for the scheme to take effect; and before parliament met again it was actually accomplished, so that ministers could once more face their opponents without any fear.

Another and more weighty consideration, however, now occurred. The European states in general had long beheld the grandeur of Britain with an invidious eye. The news of the disaster at Saratoga was therefore received by them with the same undisguised exultation as the intelligence of the defeat of Charles XII. at Pultowa was by the powers whom he had so long overawed. Of these the French, for obvious reasons, were the most active in supporting the insurgent Americans. Numbers of the young nobility were eager to signalize themselves in the American cause; and among the rest the Marquis de la Fayette, a young nobleman of high rank and fortune, occupied a conspicuous place. Impelled by an enthusiastic ardour in favour of the American cause, he purchased a vessel, loaded her with military stores, and sailed with several of his friends to America, where he offered his services to congress; and meeting with a most gracious reception, he was invested with a command, in which he lost no opportunity of distinguishing himself. Besides this nobleman, several other officers from France and Germany actually entered the American service, and by their military talents greatly contributed to the exertions which the colonies were afterwards enabled to make. This assistance, however, would have been but trifling, had not the French court also interested itself in their behalf; and about the time when the news of General Burgoyne's disaster arrived in Britain, a treaty was on foot between the French court and the United States of America. Even before this time France had shown such a partiality towards the Americans, as might plainly have indicated a design of ultimately assisting them in their national capacity. The encouragement given to the American privateers in all the ports of France had produced strong remonstrances on the part of Britain; and an order was at length demanded that all these privateers with their prizes should depart the kingdom. With this the French court found it neces-

sary at that time to comply, lest reprisals should be made by capturing their whole Newfoundland fleet then engaged in the fishery. But so many delays were occasioned on various pretences, that not a single vessel was dismissed from any of their ports; and so far were the French court from entertaining any design of this kind, that in the month of July 1777 the whole body of merchants throughout the kingdom were assured by government that they might depend on protection for their trade with America. Meanwhile the greatest preparations for war were made throughout the whole kingdom of France; and, in fact, the most judicious politicians were of opinion that a rupture with that power would have immediately followed the commencement of hostilities with America. But, whatever might have been the motives of the British ministry, it is certain, that in defiance alike of probability, and of the acrimonious censures of opposition, they continued to pretend ignorance of any hostile intentions upon the part of France, until that country of its own accord thought proper to announce them. This was done by a formal notification to the court of Britain in the month of March 1778, couched in the most insolent terms. In this declaration it was announced, not only that a treaty of friendship and commerce had been concluded betwixt France and America, but Britain was insulted by being told that America was actually in possession of independence, as if the former had already exerted her utmost efforts without being able to reduce them. A merit was also made of having entered into no commercial stipulations in favour of France exclusive of Britain. Nothing, therefore, could be more offensive than this notification; and though it could not decently be said, on the part of the French monarch, that he wished for war, yet his pacific intentions were conveyed in such haughty terms, that the whole could only be considered as a declaration of that hostility which he pretended a desire to avoid.

Accordingly both parties now united in opinion that a war with France was unavoidable; but they were not for that reason any further advanced towards a reconciliation. It must be owned, indeed, that the minority had received great provocation. They had from the beginning reproached the American war, and prognosticated its bad success. In this they had been overruled, and the character of the Americans represented in such a manner as almost to preclude the notion of their being able to resist. They had resisted, however, and by destroying or taking prisoners a whole army, had verified the predictions which had so often been treated with ridicule. The same party had frequently insisted in the most earnest manner for some kind of concession towards America; but this had constantly been refused with an obstinacy equally unparalleled and inveterate. They now, however, saw the very concessions offered to America after the defeat of Burgoyne, which, if granted in time, would have prevented all the mischief that had happened. Add to this, that every inquiry into the measures of government had been frustrated; that a motion on the state of the nation, which could not be absolutely rejected, was rendered ineffectual by delays and evasion; and that the country was involved in war with a nation well provided for all emergencies, whilst we had supinely suffered them to go on without making the least effort to put ourselves in a proper state of defence. For these reasons opposition insisted that the present ministry ought no longer to be intrusted with the management of public affairs. An acknowledgment of the independence of America was now generally supposed to be the only rational step that could be taken, as it might at present be done with a good grace, and we should unavoidably be obliged to take it at last whether we would or not.

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The operations of the French in America, with the various success of the war, will be more fully related under the head of UNITED STATES. It is sufficient here to state that D'Estaing having equally failed in his attempt on the British fleet at New York, and in assisting the allies of France in their attempt on Rhode Island, sailed for the West Indies, where he attacked the island of St Lucia; but meeting with a repulse, he proceeded to Grenada, which he reduced, while a body of troops dispatched by him also took the island of St Vincent. By this time the French admiral had been powerfully reinforced, so that his fleet consisted of twenty-six sail of the line and twelve frigates. Whilst he was employed at Grenada, Admiral Byron, with the British squadron, accompanied the homeward-bound West India fleet till it was out of danger, and then sailed with a body of troops under General Grant for the recovery of St Vincent; but before reaching that island, certain intelligence was received of the descent made on Grenada. Byron then steered directly for that island, where, without hesitation, he encountered the French fleet, notwithstanding its great superiority. At this time the French squadron amounted to twenty-seven sail of the line and seven frigates; whilst that of Britain consisted only of twenty-one line-of-battle ships and one frigate. The British admirals, Byron and Barrington, endeavoured to bring the enemy to a close engagement; but this was as studiously avoided by D'Estaing; and such was the dexterity and circumspection with which he acted, that it was only during the transient movements occasioned by the wind and weather that some of the British ships could close in with their antagonists. But when these occurred, the encounter became so unequal, that the British ships were terribly shattered. For some time Captains Collingwood, Edwards, and Cornwallis, stood the fire of the whole French fleet; and Captain Fanshaw of the Monmouth, a sixty-four gun ship, singly threw himself in the way of the enemy's van to stop them. Several of the British ships forced their way to the very mouth of St George's harbour in Grenada; but finding it in the hands of the French, an end was put to the action; nor did the latter care to renew it, although the British ships had suffered much from the greatly superior force to which they had been exposed.

D'Estaing having now received fresh reinforcements,

set sail for the continent of America, after convoying the homeward-bound fleet of French merchantmen on their return from the West India islands. He made an attempt on the town of Savannah, but was repulsed with great loss; and the result was, that the fears which had been excited by the superiority of the French in the West Indian seas were effectually dissipated. The islands of Dominica, St Vincent, and Grenada, were indeed lost, the first being taken by the Marquis de Bouillé, governor of Martinico, and the last two by D'Estaing, as already stated; but these successes were balanced by the failure of the French commander in every other enterprise, by his disaster at the Savannah, and by the acquisition of St Lucia, which was taken in the year 1778 by Admiral Barrington and Generals Prescott and Meadows. In other parts of the West Indian seas also the honour of the British arms was very effectually supported by the bravery and vigilance of the commanders on that station. Admiral Hyde Parker, assisted by Admiral Rowley, kept the enemy in continual alarm, and intercepted the trade of the French islands in such a manner as greatly distressed them. Three large frigates dispatched by Count d'Estaing after his failure in America were taken, and a great part of a convoy seized or destroyed in sight of M. de la Motte-Piquet's squadron in the harbour of Fort Royal at Martinico, the admiral himself having narrowly escaped. He had sailed out of the harbour in order to favour the escape of the convoy already mentioned, and, having partly effected his object, withdrew; but he was so closely pursued, that he had scarcely time to shelter himself under the batteries on shore. These successes, which occurred in the years 1778, 1779, and beginning of 1780, kept the event of the war pretty much in a state of equipoise on the western seas and continent; but in the meanwhile the most unhappy dissensions prevailed in every department of the British government in Europe, and threatened to involve the nation in confusion and bloodshed.

Among other charges brought by the opposition against the ministry, that of neglecting the navy was one of the most considerable; nor indeed does it appear that the charge was altogether groundless. Without a fleet, however, it was now impossible to ward off the danger of an invasion. At this time, indeed, it was in a very weak condition; but the valour and experience of the officers seemed in some measure to compensate every deficiency. The chief command was conferred on Admiral Keppel, who had served with great reputation during the last war; whilst Admirals Sir Robert Harland and Sir Hugh Palliser, both officers of undoubted courage and capacity, acted under him. On arriving at Portsmouth, towards the end of March 1778, Admiral Keppel exerted himself so effectually, that, exclusive of those ships which it was found necessary to dispatch to the coast of North America under Admiral Byron, a fleet of twenty sail of the line was got in readiness by the beginning of June, and ten more in a very forward state of preparation. At the head of this fleet Admiral Keppel sailed from Portsmouth on the 13th of June, in order to protect the commercial shipping expected from all parts of the world, and at the same time to watch the motions of the French fleet at Brest.

When the British fleet arrived off the coast of France, two French frigates approached in order to make observations. These proved to be the *Licorne* of thirty-two, and the *Belle Poule* of twenty-six guns. A signal to give chase was instantly made, and the *Milford* frigate having come up with the *Licorne* towards the close of the day, requested the French captain to heave to under the British admiral's stern. The latter refused; but a ship of the line coming up, compelled him to obey. Next morning the *Licorne* seeming by her motions to be altering her course, a shot was

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fired across her bows as a signal to keep it, upon which she discharged a broadside and a volley of small arms into the *America* of sixty-four guns which lay close to her, and immediately struck. The behaviour of the French captain was the more extraordinary, as Lord Longford, the captain of the *America*, was at that instant engaged in amicable conversation with him; but though such conduct merited severe chastisement, no return was made for this most unprovoked and wanton aggression. The *Arethusa* of twenty-six guns, commanded by Captain Marshall, with the *Alert* cutter, was meanwhile in pursuit of the *Belle Poule*, which was also accompanied by a schooner, and the chase was continued till both were out of sight of the fleet. On coming up, Captain Marshall informed the French captain of his orders to bring him to the admiral, and requested his compliance. The Frenchman refused to obey, upon which the *Arethusa* fired a shot across the *Belle Poule*, which the latter returned with a discharge of her broadside, and the engagement thus commenced continued upwards of two hours with the greatest fury. The *Belle Poule* was superior not only in numbers, but also in weight of metal; her guns being all twelve pounders, while those of the *Arethusa* were only six. But notwithstanding this inferiority, the latter maintained so desperate a fight, that the French frigate suffered a much greater loss of men than the British, having nearly a hundred killed and wounded, whilst the *Arethusa* scarcely lost half that number. During the engagement between the two frigates, Captain Fairfax in the *Alert* attacked the French schooner, which was of much the same force, and the contest continued two hours with great bravery on both sides, when the latter struck to the English cutter. The *Arethusa* received so much damage, that she became almost unmanageable; and although the captain endeavoured to put her in a condition to continue the engagement, he was unable to effect his object. Being at the same time upon the enemy's coast, and close in the shore, the danger of grounding in such a situation obliged him to act with the more caution, more especially as by this time it was midnight. Meanwhile the *Belle Poule* stood into a small bay surrounded with rocks, where she was protected from all attacks; and as soon as it was day-light, a number of boats came out from the shore, and towed her into a place of safety. Notwithstanding the evident superiority of force on the side of the French, this action was extolled by them as a proof of singular bravery, and the account of it received with as much triumph as if it had been a victory.

On the 18th of June, the day following the action with the *Belle Poule*, another frigate fell in with the British fleet, and was seized by the admiral's orders, on account of the behaviour of the *Licorne*. The capture of these French frigates furnished intelligence which proved of the utmost importance, at the same time that it was highly alarming. It was ascertained that the fleet at Brest consisted of thirty-two sail of the line and twelve frigates; and this proved in every respect a most fortunate discovery, as the admiral had under his orders only twenty ships of the line and three frigates. As the superiority of the enemy was so decided, and as the consequences of a defeat would have been fatal to this country, the admiral thought himself bound in prudence to return to Portsmouth for reinforcements. He reached Spithead on the 27th of June, and remained till the arrival of the ships from the Mediterranean and the Spanish and Portuguese trade; while the summer fleet from the West Indies brought him a further supply of seamen, and enabled him to put to sea again with an addition of ten ships of the line. But still there was a deficiency of frigates, owing to the great numbers on the American station, and the necessity of manning the ships of the line in preference to all others.

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In the mean time the preparations at Brest being fully completed, the French fleet put to sea on the 8th of July. It consisted of thirty-two sail of the line, besides a large number of frigates; and Count d'Orvilliers commanded in chief, while the other principal officers were Counts Duchaffault, de Guichen, and de Grasse, M. de Rochechoart and M. de la Motte-Piquet. A prince of the blood royal had also been sent to serve on board of this fleet; we mean the Duke of Chartres, son and heir to the Duke of Orleans, and first prince of the blood royal of France in the collateral line, who commanded one of the divisions in the capacity of admiral. On the 9th day of July, the British fleet sailed out of Portsmouth in three divisions; the first commanded by Sir Robert Harland, the third by Sir Hugh Palliser, and the centre by Admiral Keppel, accompanied by Admiral Campbell, an officer of great courage and merit. The French had been informed that the British fleet was greatly inferior to their own, which was true at the time when they received the information; and being yet unapprised of the reinforcement it had received, Count d'Orvilliers sailed at first in quest of it, intending to attack it while in the weak condition represented to him.

As the British admiral was equally intent on coming to action as soon as possible, they were not long before they met. The hostile fleets came in sight on the 23d of July; but the appearance of the British ships soon convinced the French admiral of his mistake, and he immediately determined to avoid an engagement as anxiously as he had formerly sought it; and in this he was favoured by the approach of night. All that could be done by the British, therefore, was to form the line of battle, in expectation that the enemy would follow the example. During the night the wind changed, and the French getting the weather-gage, had the choice of coming to action or of declining it entirely in their own power, whilst the British admiral was deprived of the opportunity of forcing them to engage as he had proposed. During the space of four days matters continued in this state; the French cautiously avoiding a battle, and the British beating up against the wind with a resolution to attack them. But notwithstanding all his efforts, the British admiral had the mortification to see his endeavours defeated by the vigilance and precaution of the enemy. The chase lasted till the 27th of July. But between ten and eleven in the morning of that day, an alteration of wind and weather occasioned several movements in both fleets, which brought them so near each other, that it was no longer in the power of the enemy to decline an engagement. Both fleets were now on the same tack, and had they so remained, the British fleet on coming up with the French would have had an opportunity of engaging ship to ship; but as this was a mode of combating quite contrary to the wishes of the enemy, their admiral, as soon as he found an action likely to ensue, put his ships on the contrary tack, by which means a close action was avoided. As soon as the van of the British fleet, consisting of Sir Robert Harland's division, came up, they directed their fire upon it, though at too great a distance to make any impression; but the fire was not returned by the British ships till they came close enough to do execution. In this manner the hostile fleets passed close to each other on opposite tacks, keeping up a very heavy and destructive fire.

The centre division of the British line having passed the rearmost ships of the enemy, the first care of the admiral was to renew the engagement as soon as the ships of the different fleets yet in action had got clear of each other respectively. Sir Robert Harland, with some ships of his division, had already tacked, and stood towards the French; but the remaining part of the fleet had not yet tacked, and some had dropped to leeward, and were repair-

ing the damages which they had received in the action. His own ship the Victory had suffered too much to tack about instantly; and had he done it he would have thrown the ships astern of him into disorder. As soon as it was practicable, however, the Victory wore, and steered again upon the enemy before any other ship of the centre division, not above three or four of which were able to follow the example. The other ships not having recovered their stations near enough to support each other on a renewal of the action, in order to collect them more readily for that purpose the admiral made the signal for the line of battle ahead. It was now three in the afternoon; but the ships of the British fleet had not sufficiently regained their stations to engage. The Victory lay nearest the enemy, with the four ships above mentioned, and seven more of Sir Robert Harland's division. These twelve were the only ships in any condition for immediate service; of the others belonging to the centre and to Sir Robert Harland's division, three were a great way astern, and five at a considerable distance to leeward, much disabled in their rigging. Sir Hugh Palliser, who commanded the rear division during the time of action, in which he had behaved with signal bravery, came of course last out of it, and, in consequence of the admiral's signal for forming the line of battle ahead, was to have led the van on renewing the fight; but his division was upon the contrary tack, and was entirely out of the line. The French, on the other hand, expecting to be directly re-attacked, had closed together in tacking, and were now spreading themselves into a line of battle. But on discovering the position of the British ships which had fallen to leeward, they immediately stood towards them in order to cut them off. This obliged the admiral to wear, and to steer athwart the enemy's foremost division, in order to secure them; directing, at the same time, Sir Robert Harland to form his division in a line astern, in order to confront the enemy till Sir Hugh Palliser should come up, and enable him to act more effectually. In moving to the protection of the leeward ships the admiral was now drawing near the enemy. As Sir Hugh Palliser still continued to windward, he made a signal for all the ships in that quarter to come into his wake, and Sir Hugh repeated this signal; but it was unfortunately mistaken by the ships of his division for an order to come into his own wake, which they did accordingly; and as he still remained in his position, they retained theirs of course. Sir Robert Harland was now directed to take his station ahead, and the signal was repeated for Sir Hugh Palliser's division to come into his wake; but this signal was not complied with, any more than a verbal message to that purpose, and other subsequent signals for Sir Hugh's division coming into its station in the line, before it was too late to recommence any operations against the enemy. In the night, the French resolved to put it wholly out of the power of the British fleet to attack them a second time; and for this purpose three of their swiftest sailing vessels were fixed in the stations occupied during the day by the three flag ships of the respective divisions, with lights at their mast heads, to deceive the British fleet into the belief that the French fleet kept its position with an intent to fight next morning. Protected by this stratagem, the remainder of the French fleet drew off unperceived during the night, and retired with all speed towards Brest, which they entered the following day. Their departure was not discovered till break of day; but it was too late to pursue them, as they were only discernible from the mast heads of the largest ships in the British fleet. The admiral then made the best of his way to Plymouth, as being the nearest port, in order to put his fleet into a proper condition to return in quest of the enemy.

This action, whatever might have been the merit of the

commanders, proved a source of fatal animosity. The bulk of the nation had so long been accustomed to hear of great and glorious victories at sea, that it was supposed a kind of impossibility for a French and British fleet to encounter without the total ruin of the former. The event of the last engagement, therefore, became an object of severe criticism; and complaints were made, that, through the bad conduct of the blue division, an opportunity had been lost of gaining a complete victory over the French fleet. These complaints were quickly introduced into the public papers; and were carried on with a warmth and vehemence which threw the whole nation into a ferment. The friends of Sir Hugh Palliser, the vice-admiral of the blue, were no less violent in the defence of his conduct than his opponents were in its condemnation; whilst those who espoused the cause of the admiral manifested equal determination in accusing him of being the real cause of the escape of the French fleet, through his disobedience of the signals and orders of his commander, and by remaining at a distance with his division, instead of coming to the assistance of the rest of the fleet. An accusation of so weighty a nature alarmed Sir Hugh Palliser, who in consequence applied to Admiral Keppel for a justification of his conduct, and required of him to sign and publish a paper relative to the engagement of the 27th of July, stating, that he did not intend by his signals on the evening of that day to renew the battle then, but only to be in readiness for the next morning. The admiral rejected this demand, on which Sir Hugh Palliser published, in one of the daily papers, a variety of details concerning the engagement, reflecting severely on the conduct of the admiral, and prefacing the whole by a letter signed with his name. An attack so public, and so detrimental to his character, induced Admiral Keppel to declare to the admiralty, that unless Sir Hugh Palliser explained this matter to his satisfaction, he could not, consistently with his reputation, ever again act in conjunction with that officer.

This altercation having occurred before the meeting of parliament, was of course noticed when it assembled. In the House of Peers an inquiry was demanded into the conduct of the commanders of the fleet on the 27th of July; and in the House of Commons it was urged, that as Admiral Keppel had expressed a public refusal to serve in conjunction with Sir Hugh Palliser, the cause of such a declaration ought to be investigated. Admiral Keppel and Sir Hugh Palliser, who were both present in the house upon this occasion, spoke severally on the point in question; and after a keen debate, a motion was made for an address to the crown to bring Sir Hugh Palliser to a trial for his behaviour in the late engagement with the French fleet. To this motion Sir Hugh Palliser replied, in a speech of great heat and vehemence, that he had already demanded and obtained a court-martial on Admiral Keppel, whom he now charged with having, through his misconduct, caused the failure of success in that engagement. This intelligence was received with astonishment in the house. It had been, and still continued to be, the general desire of individuals of all parties, to heal the breach between these officers at a time when the services of both were so much needed; and it was therefore with deep concern that the house learned the determination which had been taken to bring Admiral Keppel to a trial. The admiral, however, conducted himself on this occasion with remarkable temper and coolness. He acquiesced without reluctance in the orders which had been given him to prepare for a trial of his conduct; and he expressed a hope, that, upon inquiry, it would be found to have been neither dishonourable to his country nor discreditable to himself.

But the conduct of the board of admiralty in admitting

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the charges against Admiral Keppel, and appointing a trial, was strongly censured in the house, upon the ground that it was their duty to labour with the utmost earnestness, and exert their whole official influence, to stifle an unhappy disagreement, the consequences of which might be highly detrimental to the public service, instead of promoting the dispute, by consenting to bring it to a judicial and public hearing. On the other hand, it was observed, that the admiralty could not, consistently with the impartiality which they owed to every officer of the navy, refuse to receive all matters of complaint relating to subjects in their department; that they had no right to decide on the merits of any case laid before them, but were bound to refer it to a court composed of naval officers, who were the only proper and competent judges in professional matters; that, in conformity with these principles, they left the decision of the present altercation to the gentlemen of the navy, whose honour and integrity in all instances of this kind had never been called in question, and by whose verdict every officer in that branch of the service must wish to stand or fall. The arguments upon this subject being urged with much heat and vehemence, generated uncommon animosity, and gave rise to a spirit of contention which diffused itself among all classes of society. Individuals of every rank and profession engaged in it with as much zeal as if they had been personally concerned in the issue; and the dissatisfaction that prevailed among the upper classes in the navy appeared in a memorial presented to the king by twelve of the oldest and most distinguished admirals, at the head of whom was Lord Hawke, condemning the conduct of Sir Hugh Palliser without reserve, and censuring that of the admiralty itself, as establishing a precedent pregnant with the most ruinous consequences to the naval service. The majority of those who subscribed this memorial were not only officers of the highest rank and importance in the navy, but unconnected with the opposition, and attached by various motives to the court and ministry; so that their conduct in this instance must have been uninfluenced by party considerations.

No business of consequence was discussed in either house of parliament during the trial, which began upon the 7th of January 1779, and lasted till the 11th of February ensuing. After a lengthened and minute investigation, the court-martial acquitted Admiral Keppel, in the most complete and honourable manner, of all the charges which had been brought against him; he was declared to have acted the part of a judicious, brave, and experienced officer; and the accusation was censured in the severest manner. Both houses of parliament then voted him their thanks for the eminent services he had performed; the city of London conferred on him every mark of honour and respect it could bestow; and the nation re-echoed with his praise; whilst the resentment against his accuser was so strong as to constrain him to retire wholly from public life, and to resign all his employments. But notwithstanding the high degree of national favour and esteem in which Admiral Keppel stood, he thought it prudent to withdraw from a situation in which he found himself not acceptable to those in power, and accordingly resigned his command.

The conduct of those who presided at the admiralty board now became an object of severe censure; and a number of facts were cited to prove, that for many years past they had acted in a manner highly reprehensible. The debates were uncommonly animated; and a resolution for censuring the conduct of the admiralty was lost by a majority of only thirty-four. Administration, however, still kept their ground; and although a second attempt was made to show that the state of the navy was incommensurate with the vast sums bestowed upon it, the point

was again lost by nearly the same majority as before. But however victorious they might be in divisions, the conduct of the admiralty was far from giving general satisfaction. Following the example of Admiral Keppel, Lord Howe declared his resolution to relinquish the service while it continued under the present system of management; and his resignation was followed by that of Sir Robert Harland, Sir John Lindsay, and several others; nay, so general had the dislike to the service now become, that no fewer than twenty captains of the first distinction proposed to go in a body to resign their commissions at once; and they were prevented doing so only by the urgent occasion there was at that time for their services.

The same feeling which led to these resignations produced a direct attack upon Lord Sandwich, then first lord of the admiralty. But though in this as in other cases the ministry were victorious, they could not prevent an inquiry into the cause of our want of success in the American war. This was insisted upon by Lord Howe and General Howe, whose conduct had been so much reflected upon, that a vindication became absolutely necessary. The inquiry was indeed singularly disagreeable to the administration, and consequently evaded as long as possible. From the evidence of Lord Cornwallis and other officers of high rank, however, it appeared that the forces sent to America were at no time sufficient to reduce it; that the Americans were almost universally unfriendly to the British cause; and that from the nature of the country, the conquest of it would be attended with great difficulties. It was also proved, that, from its great strength, the camp of the Americans on Long Island could not have been attacked with any probability of success, after their defeat in 1776, owing to the want of artillery and other necessities. In every instance, therefore, the general's conduct was shown to have been judicious and proper. But these facts being directly at variance with the view which the ministry wished to countenance, counter-evidence was produced, in order to invalidate the testimony of the respectable witnesses above mentioned, and Major-general Robertson, and Mr Joseph Galloway, an American gentleman, were examined. According to the evidence of Mr Galloway especially, the conduct of General Howe had not been unexceptionable; the greater part of the Americans were friendly to the cause of Britain; the country was not so full of obstructions as had been represented; the woods and forests formed no obstruction to the marching of armies in as many columns as they pleased; and soldiers might carry provisions for nineteen days on their backs. Upon such extravagant assertions, proceeding undoubtedly from ignorance, no stress whatever could be laid; yet they fully answered the purpose of ministry at this time, namely prostration, and preventing the disagreeable truths elicited in the course of the inquiry from striking the minds of the public too forcibly.

The event of this inquiry, however, encouraged General Burgoyne to insist for an examination of his conduct, which indeed had been so unmercifully censured, that even the ministers began to think he had suffered too much, and that he ought to be allowed to vindicate himself. He was accordingly permitted to bring witnesses in his own behalf, and from the evidence produced, it appeared that he had acted the part both of a general and a soldier; that the attachment of his army to him was so great, that no dangers or difficulties could shake it; and that, even when all their patience and courage were found to be ineffectual, they were still ready to obey his commands, and die with arms in their hands. A great number of other particulars relating to his expedition were also cleared up; several charges against him were refuted; and it appeared that the Americans, far from being

the contemptible enemy they had been called, were introduced and resolute antagonists.

After the resignation of Admiral Keppel, the command of the Channel fleet was bestowed on Sir Charles Hardy, a brave and experienced officer, but now advanced in years, having retired from the service with the design of not returning to it, and being at that time governor of Greenwich hospital. The choice of an admiral to command this fleet was now of the greatest importance, on account of the accession of Spain to the general confederacy which took place during the present year. This determination was formally intimated by the Spanish minister on the 17th of June 1779, and was attended with new but ineffectual proposals for an accommodation with America, and the removal of the ministry. The imminent danger, however, to which the nation was now exposed, required vigorous exertion; and various projects for its internal defence were laid before the parliament. The spirit and magnanimity displayed on this occasion did the highest honour to the national character, and fully justified the opinion entertained of its valour and resources. All parts of the kingdom seemed actuated by a desire to concur in every measure necessary for its defence; large sums were subscribed by persons of rank and affluence; and companies were raised, and regiments formed, with an alacrity which quickly banished all apprehensions for the safety of the country.

On the other hand, the French, thinking themselves secure of victory by the accession of Spain, began to extend their schemes of conquest; and a squadron was fitted out under the command of the Marquis de Vaudreuil, destined to reinforce the fleet commanded by D'Estaing. But before proceeding to its destination, this squadron made an attack on the British settlements on the rivers Senegal and Gambia, which were easily conquered. On this occasion the French quitted their own island of Goree, which was soon afterwards taken possession of by Sir Edward Hughes, when on his way to the East Indies. But these distant conquests being insufficient to produce any serious impression, it was resolved to strike a blow nearer home, by the conquest of Jersey and Guernsey. An attempt was accordingly made on these islands, but with so little success that not a single man could be disembarked on the spot which they intended to conquer. The enterprise, however, proved indirectly serviceable to the cause of America. A fleet of four hundred merchantmen and transports was at this time on the point of sailing for New York, under the conduct of Admiral Arbuthnot; but that officer, informed of the attack on Jersey, thought it his duty to go to the assistance of that island rather than proceed on his voyage; and this delay was followed by another, occasioned by bad weather, so that the fleet, which was laden with warlike stores and necessities, did not arrive till the end of August, and several important enterprises projected by Sir Henry Clinton were in consequence abandoned. The French, however, determined to make a second attempt on Jersey; but their squadron, being attacked by another under Sir James Wallace, was driven on shore in a small bay on the coast of Normandy, under cover of a battery, and pursued by the British commander, who silenced the battery, took a thirty-four gun frigate, with two rich prizes, and burned two other frigates and several vessels besides.

Thus disappointed in the attempt on Jersey, the court of France next projected an invasion of Great Britain itself; and the preparations for the enterprise, whether serious or not, were so formidable, as justly to excite a considerable alarm in this country. Not only were the best troops in the French service marched down to the coasts of the British Channel, but transports were provided in great numbers, and many general officers promoted; the persons who were to command this important ex-

pedition were also named by the government. A junction was formed between the French and Spanish fleets, in spite of the endeavours of the British to prevent it; and the combined fleets made their appearance in the British seas with upwards of sixty ships of the line, besides a vast number of frigates and other armed vessels. But all this formidable preparation ended in the capture of only a single ship, the *Ardent*, of sixty-four guns. The combined fleets had passed the British fleet under Sir Charles Hardy in the mouth of the Channel without observing him; and then sailing along the coast of England, they came in sight of Plymouth, where they captured the *Ardent*, as already mentioned; after which they returned, without making the least attempt to effect a landing. The British admiral made good his entrance into the Channel without opposition, on the enemy quitting it, which a strong easterly wind obliged them to do; and he endeavoured to entice them up the Channel in pursuit of him; but the great sickness and mortality on board their ships obliged them to retire, in order, as they alleged, to recruit the health of their crews. Thus ended the first, and indeed the greatest exploit performed by the combined fleets in the British seas. An annual parade of a similar kind was afterwards kept up, and as formally opposed on the part of the British; but no act of hostility was ever committed by either of the Channel fleets against each other.

Though the pusillanimity manifested by the combined fleets was such that the French themselves were ashamed of it, the appearance of them in the Channel furnished opposition with abundance of matter for declamation. All ranks of men, indeed, now began to be wearied of the American war; and even those who had formerly been the most zealous in recommending coercive measures were at length convinced of their utter inutility. The calamitous effects produced by the continuation of these measures, indeed, had by this time rendered the greater part of the people exceedingly averse to the war; and the almost universal wish was, that the oppressive burden of the American contest should be cast off, and the entire national strength exerted against those whom we had been accustomed to consider as our natural enemies. Nevertheless, the national spirit continued to be exerted with unabated vigour. Large sums, subscribed in the several counties, were employed in raising volunteers, and forming them into independent companies; and associations were also entered into in the towns, where the inhabitants bestowed a considerable portion of their time in training themselves to the use of arms. The East India Company, too, forgot their quarrels with ministry, and not only presented government with a sum sufficient for levying six thousand seamen, but at its own cost added three seventy-four gun ships to the navy.

Administration, however, not yet weary of the plans which they had originally adopted, seemed still inclined to prosecute schemes of conquest. The virulence of opposition continued unabated; and, what was worse, every part of the kingdom seemed to imbibe the sentiments of the minority in parliament. Amongst the charges now brought against ministers was that of misapplying the national force. An hundred thousand men were employed for the internal defence of the kingdom. The army of Great Britain at this time fell little short of three hundred thousand men; the navy amounted to three hundred sail, including frigates and armed vessels; twenty millions had been expended on the service of the year 1779; and yet, with all this force and treasure, the utmost boast that ministers could make was, that the enemy had hitherto been kept at bay. Nor were the other charges of a less grave description. Veteran officers had been passed over to make room for persons of inferior merit; whilst the discontents and miserable state

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of Ireland, the loss of the West India islands, and other disasters, were all put to the account of ministers; and it was alleged that the universal cry of the nation was for their dismissal. To all this ministry replied by denying or attempting to refute every allegation, and at last, after several stormy debates, gained their point of an address without an amendment, by large majorities in both houses.

But the enormous expense incurred in carrying on the war occasioned such general alarm, that it was no longer possible to refuse complying with some scheme of economy, or at least giving it a patient hearing. The Duke of Richmond proposed that the crown should set the example, and moved for an address to this purpose; but the motion was negatived. The Earl of Shelburne next brought the subject under the consideration of parliament; and having, in a very elaborate speech, compared the expenses of former times with the present, and shown the immense disparity, he moved that the expenditure of the vast sums annually sunk in extraordinaries should be brought under some control, and that to extend the public expenses beyond the sums granted by parliament, was an invasion of its peculiar and exclusive rights. But although the Earl of Shelburne's motion was rejected, and some others of a similar tendency shared the same fate, the minds of the people were far from being conciliated to the views of ministers. On the contrary, an opinion began to prevail that they exercised an unconstitutional influence over the representatives of the nation, and that as this influence had recently been greatly augmented, nothing short of a change in the constitution of parliament could remedy the evil complained of. Accordingly, on the 30th of December 1779, a petition to this effect was framed in the city of York, where a number of the most respectable people in the county had assembled; and sixty-one gentlemen were appointed as a committee for carrying into effect the object contemplated by the petitioners. The York petition was followed by others of a similar description from twenty-seven of the principal counties and largest towns in England; while severe and even opprobrious language was used in the county meetings respecting both the ministry and the parliament.

The emissaries of America and the other enemies of Great Britain are said to have been active in fomenting these discords, which at this period rose to a height unknown for a century past. But the ministry continued firm, and, previous to taking any of the petitions into consideration, insisted on going through the business of the supplies.

At length, in the beginning of February 1780, a plan was brought forward by Mr Burke, for securing the independence of parliament, and introducing economy into the various departments of government. He proposed the abolition of the offices of treasurer, comptroller, and cofferer of the household; of treasurer of the chamber, master of the household, the board of green cloth, and several other places under the steward of the household; of the great and removing wardrobe, the jewel office, the robes, board of works, and the civil branch of the board of ordnance. Other reformatory measures were also suggested; but though the temper of the times obliged the minister to admit the bills, and even to pretend an approbation of the plan, he had no serious intention of acquiescing in the scheme to its full extent, or indeed in any part, if he could possibly help it. When the plan, therefore, came to be considered in detail, he was provided with objections to every part of it. But the general temper of the people without doors had now affected many of the members of parliament, and caused them to desert their old standard. An economical plan proposed in the House of Lords by the Earl of Shelburne was rejected by a narrow majority, and in the lower house matters went still

worse. The first proposition in Mr Burke's plan was to abolish the office of secretary of state for the colonies; and the utmost efforts of administration could preserve this office only by a majority of seven. The board of trade, however, was abolished by a majority of nine; but this was the only defeat sustained by ministry at present, all the rest of the plan being rejected excepting only one clause, by which it was enacted that the offices of lieutenant and ensign in the yeomen of the guards should no longer be sold, but given to officers in the army and navy on half pay, and of fifteen years' standing in their respective departments of service.

But the administration were destined to sustain a still more mortifying defeat than that which they had met with in the abolition of the board of trade. The 6th of April being the day appointed for taking into consideration the numerous petitions already mentioned, the subject of these was introduced by Mr Dunning, in an elaborate speech, in which he dwelt on the numerous attempts which had been made to introduce reformation and economy into the plans of government, and which had been defeated by ministerial artifice, or overthrown by mere dint of numbers; and he concluded by moving the celebrated resolution, that "the influence of the crown has increased, is increasing, and ought to be diminished." After a long and stormy debate, this motion was carried; upon which Mr Dunning further moved, that the House of Commons was as competent to examine into and correct abuses in the expenditure of the civil list as in any other branch of the public revenue; and this was followed by a third resolution, moved by Mr Thomas Pitt, that it was the duty of the house to provide an immediate and effectual redress of the abuses complained of in the petitions. The ministry now interposed with a request that nothing further might be done at that sitting; but such was the temper of the house, that both these motions were carried without a division.

Ministry had never experienced such a complete defeat, nor been treated with so much asperity of language. The news of the proceedings of the day were received by the people at large with as much joy as if a complete victory over a foreign enemy had been announced. Opposition, however, though masters of the field at present, did not imagine that they had obtained any permanent victory, and therefore resolved to make the most of the advantages they had gained. Accordingly, at the next meeting it was moved by Mr Dunning, that to ascertain the independence of parliament, and remove all suspicion of its being under undue influence, there should, every session, seven days after the meeting of parliament, be laid before the house an account of all the sums issued out of the civil list, or any other branch of the revenue, since the last recess, in favour of any of its members; and this passed with little difficulty. But when he moved that the treasurers of the chamber and household, the cofferer, comptroller, and master of the household, with the clerks of the green cloth, and their deputies, should be excluded from having seats in the house, a warm debate ensued, and the motion was carried only by a majority of two. This was the last triumph of the popular party; their next motion, for the exclusion of revenue officers, being thrown by a majority of twenty-seven. A final effort was however made by Mr Dunning, who proposed an address to the throne against proroguing or dissolving the parliament, until measures had been taken to prevent the improper influence complained of in the petitions; but on a division the motion was lost by a very considerable majority. Ministry would gladly have screened their friends from the vengeance of opposition, alleging the lateness of the hour, it being then past midnight; but the Speaker perceiving Mr Fox about

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The last victory of administration confirmed the unfavourable opinion which the people had conceived of the majority of their representatives; and in the height of the ill humour which the conduct of the parliament had created in the multitude, those discontents broke out which were so near involving the kingdom in a species of civil war. The hardships under which individuals of the Roman Catholic persuasion laboured in this country had lately engaged the consideration of enlightened and liberal-minded men; whilst the inutility as well as absurdity of persecuting people from whom no danger was to be apprehended, and who were not suspected of disaffection to the civil constitution of this country, had induced several persons of rank and influence to undertake to procure them relief from the disabilities under which they laboured. Meanwhile the calamities of the times had afforded the Catholics a proper occasion for manifesting their attachment to government; and accordingly they presented a loyal and dutiful address to the king, containing the strongest assurances of affection and fidelity to his person and civil government. They declared that their exclusion from many of the benefits of that constitution had not diminished their reverence for it; that they had patiently submitted to such restrictions and discouragements as the legislature thought expedient, and had thankfully received such relaxation of the rigour of the laws as the mildness of an enlightened age and the benignity of the British government had gradually produced; that they submissively waited, without presuming to suggest either time or measure, for such other indulgence as the happy causes alluded to could not fail in their own season to effect; that their dissent from the legal establishment in matters of religion was purely conscientious; that they held no opinions adverse to his majesty's government, or repugnant to the duties of good citizens; that they thought it their duty to assure his majesty of their unreserved affection to his government, of their unalterable attachment to the cause and welfare of the country, and their detestation of the designs and views of any foreign power against the dignity of the crown and the safety and tranquillity of the people; and that, though they did not presume to point out the particular means by which they might be allowed to testify their zeal and their wishes to serve the country, they would be perfectly ready, on every occasion, to give such proofs of their fidelity, and of the purity of their intentions, as his majesty's wisdom and the sense of the nation should at any time deem expedient. This address was presented to the king on the 1st of May 1778, and was signed by the Duke of Norfolk, the Earls of Surrey and Shrewsbury, the Lords Stourton, Petre, Arundel, Dormer, Teynham, Clifford, and Linton; and by a hundred and sixty-three commoners of rank and fortune.

The only obstacle which stood in the way was the difficulty of overcoming the prejudices of the lower classes, who were disposed to disapprove of and condemn any indulgence shown to those of a persuasion which they had been taught to regard with horror and detestation. But notwithstanding the prepossessions of the vulgar, it was resolved by several individuals of generous and liberal sentiments, to espouse their cause as far as it could be done consistently with the principles of the constitution and the general temper of the times. And the circumstance of their being patronized by some of the principal leaders of opposition was greatly in their favour; for it

showed that those who professed to be the most strenuous friends of freedom and the constitution did not imagine that these would be endangered by treating the Roman Catholics with more lenity than they had hitherto experienced. Accordingly, about the middle of May, Sir George Saville made a motion for the repeal of some of the disqualifications under which the Catholics laboured. He grounded his motion on the necessity of vindicating the honour and asserting the true principles of the Protestant religion, of which the peculiar merit consisted in an abhorrence of persecution. He represented the address above quoted as a convincing proof of the loyal disposition of the Roman Catholics, and as an unfeigned testimony of the soundness of their political principles; and, to silence the objections of those who might suspect the Catholics of duplicity, a test was proposed of so binding and solemn a nature, that no authority could annul its efficacy.

The pains and penalties of the statutes to be repealed were laid before the house by Mr Dunning. By these statutes it was made felony in a foreign clergyman of the Catholic communion, and high treason in one who was a native of this kingdom, to teach the doctrines, or perform divine service according to the rites, of that church; the estates of persons educated abroad in the Catholic persuasion were forfeited to the next Protestant heir; a son, or any other nearest relation, being a Protestant, was empowered to take possession of his own father's, or nearest kinsman's estate, during their lives; and a Roman Catholic was disabled from acquiring any legal property by purchase. The mildness of the British government did not indeed countenance the enforcement of the severities enacted by these statutes; but still the prospect of gain subjected every man of the Roman Catholic persuasion to the ill usage of informers; and on the evidence of such miscreants the magistrates were bound, however unwilling, to put these cruel laws in execution.

In consequence of such representations, the motion made in favour of the Roman Catholics was received without a dissentient voice; and a bill conformable thereto was brought into and passed through both houses. The test or oath to be taken by the Catholics was conceived in the strongest terms. They were to swear allegiance to the king's person and family, and to abjure especially the pretensions to the crown assumed by the person called Charles III. They were to declare their disbelief and detestation of the doctrines, that it is lawful to put individuals to death on pretence of their being heretics; that no faith is to be kept with heretics; that princes excommunicated by the pope and council, or by the see of Rome, or any other authority, may be deposed or murdered by their subjects or by any others; and that the pope of Rome, or any other foreign prelate or sovereign, is entitled to any temporal or civil jurisdiction or pre-eminence, either directly or indirectly, in this kingdom. And they were solemnly to profess, that they made the aforesaid declarations with the utmost sincerity, and in the strictest and plainest meaning of the words and language of the test, without harbouring a secret persuasion that any dispensation from Rome, or any other authority, could acquit or absolve them from the obligations contracted by this oath, or declare it null and void.

The favour shown to the Roman Catholics in England encouraged those of the same persuasion in Scotland to hope for a similar relief; and several Scottish gentlemen of high rank and character, who had seats in the house, not only expressed their warmest wishes for the extension of the indulgence to their own country, but declared their intention to bring in a bill for the purpose the ensuing session. The design was approved of by the General Assembly of the Church of Scotland; and a petition on behalf of the

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Roman Catholics in Scotland was in consequence prepared. But these favourable prospects were for a time obscured by a dense cloud of religious fanaticism, looming large and high in the political horizon. A pamphlet appeared, in which the doctrines and professors of the Roman Catholic religion were represented, the former as damnable, and the latter as the common foes of mankind and the disturbers of all states; and this inflammatory production being circulated among every class, raised up a great number of enemies to the intended petition. The opposition was at first chiefly conducted by persons at Edinburgh, who assumed the title of The Committee for the Protestant Interest, and under that denomination carried on a correspondence with all those who coincided in their opinions, being in fact a very large proportion of the common people in Scotland. This committee, from its residence in the capital of the kingdom, was naturally supposed to consist of persons of weight and influence; and hence it in a manner directed the motions of all the others. The persons of whom it was composed, however, acted from honest though mistaken views. They aimed only at the preservation of the Protestant religion and the liberties of their country, which they conceived to be endangered by the indulgence shown to individuals of the Roman Catholic persuasion; and, actuated by these ideas, they exerted themselves so effectually, that the principal gentlemen of the Catholic persuasion thought it requisite to convey to the ministry an intimation of their desire to desist for the present from applying for an indulgence similar to that which had been extended to their fellow-subjects of the same communion in England. They published also in the newspapers the representation which they had made to the ministry, in hopes of convincing the country that they were sincerely disposed to remove any cause of dissatisfaction on their own account, and to submit to any inconvenience rather than occasion disturbance, even in the prosecution of a lawful and praiseworthy object. But matters had now gone too far to be conciliated by any concessions.

On the 2d day of February 1779, the populace met according to appointment, in order to carry into execution the various projects which they had in contemplation. They began by an attack upon the house inhabited by the Roman Catholic bishop, and others of his persuasion, which they committed to the flames, together with the place of worship adjoining to it; and having in the same manner destroyed another house, which also contained a chapel, they proceeded to vent their resentment on several individuals of the same persuasion by burning their effects. The next objects of their vengeance were those who had patronised the Roman Catholics. They beset the houses of Dr Robertson and Mr Crosby; but the friends of these eminent persons, on hearing of the intentions of the rioters, came to their assistance in such numbers, and so well prepared to repel force by force, that the populace did not dare to commit the violence they had premeditated. This spirited conduct, which was followed by the adoption of the necessary precautions against their malevolent designs, put an end to the attempts of the mob at Edinburgh. But the spirit of dissatisfaction on account of the intended indulgence remained in full force; and ministry being held out as harbouring a secret determination to undermine the Protestant religion, and to introduce popery, were in consequence loaded with the most outrageous invectives.

Matters, however, did not stop here. The same ungovernable spirit was soon communicated to a part of the English nation; the cry against popery became daily louder among the inferior classes; and that inveteracy which time appeared to have mitigated began to revive in as powerful a degree as if the nation were actually under the impending horrors of persecution. To this were added

the secret fears of others, who still imagined that it was not inconsistent with good policy to discourage a religion, from the professors of which so much danger had accrued to the constitution of this country in former times, and who, though averse to acts of violence, thought it necessary to keep alive the antipathy to the ancient faith, and by no means to show a willingness to grant any further indulgence than it had hitherto experienced. On these grounds they were of opinion, that a suspension of the laws enacted against it, although tacit and unauthorized, was sufficient to remove all complaints of harshness and oppression on the part of the Roman Catholics; and they looked upon the penal statutes as a requisite bar to confine the Catholics within the bounds of due submission to the laws of a Protestant state.

Hence a society was formed in London, under the designation of the Protestant Association, and Lord George Gordon, who had rendered himself conspicuous in Scotland by his opposition to the repeal, was elected its president; and this body now prepared to act in a decisive manner against the resolutions of the legislature.

On the 29th of May 1780 the members of the association held a meeting in order to settle as to the manner in which they should present a petition to the House of Commons against the repeal of the penal statutes; and on this occasion a long speech was delivered by the president, who represented the Roman persuasion as gaining ground rapidly in the country, and affirmed that the only method of stopping its progress, was to go up with a spirited remonstrance to their representatives, and to tell them in plain and resolute terms that they were determined to maintain their religious freedom against all enemies, and at whatever sacrifice. This harangue being received with the loudest applause, Lord George next moved that the whole body of the association should meet on the second day of June, in St George's Fields, at ten in the morning, to accompany him to the House of Commons for the presentation of the petition; which was also assented to unanimously. Lord George then informed the meeting, that if he found himself attended by fewer than twenty thousand persons he would not present the petition; he directed them to form into four divisions, the first, second, and third consisting of those who belonged to the city, Westminster, and Southwark, and the fourth of the Scottish residents in London; and all were requested, by way of distinction, to wear blue cockades in their hats. Three days previous to the presentation of the petition, he gave notice of it in the ordinary form to the house, and stated the manner in which it was to be presented; but this was received with as much indifference and unconcern as all his former intimations.

On the second day of June, according to appointment, about fifty or sixty thousand persons assembled in St George's Fields; and drawing up in four divisions, as had been arranged, proceeded to the parliament house, with Lord George Gordon at their head. An immense roll of parchment was carried before them, containing the names of those who had signed the petition. On their way to the house they behaved with propriety and decency; but immediately on their arrival disturbances commenced. The rioters began by compelling all the members of both houses whom they met to put blue cockades in their hats, and call out "No Popery;" they forced some to take an oath that they would vote for the repeal of the popery act, as they styled it; and they treated others with great indignity, posting themselves in all the avenues to both houses, the doors of which they twice endeavoured to break open. But their rage was chiefly directed against the members of the House of Lords, several of whom narrowly escaped being murdered.

During these disturbances Lord George Gordon moved

Reign of George III. for leave to bring up the petition, which was readily granted; but when he moved that it should be taken into immediate consideration, his proposal was strenuously opposed by almost the whole house. Enraged at this opposition, he came out several times to the people during the debate, acquainting them how averse the house appeared to grant their petition, and naming particularly those who had spoken against it. Several members of the house expostulated with him in the warmest terms on the unjustifiableness of his conduct; and one of his relations, Colonel Gordon, threatened to run him through the moment any of the rioters should force their entrance into the house. It was some hours before the house could carry on its deliberations with any regularity, which was not done till the members were relieved by the arrival of a party of the guards. As soon as order had been restored, the business of the petition was resumed, when Lord George Gordon told the house that it had been signed by nearly a hundred and twenty thousand British Protestant subjects, and he therefore insisted that the petition should be considered without delay. But notwithstanding the dangers with which they were menaced, and the proof which the mover of the petition had given that no means would be left unemployed to compel them to grant it, the Commons continued immovable in their determination, and of two hundred members then present in the house, six only voted for taking the petition into immediate consideration.

In the mean time the mob had dispersed itself into various parts of the metropolis, where they demolished two Roman Catholic chapels belonging to foreign ministers, and openly vented the most terrible menaces against all persons of that persuasion. On the 4th of June they assembled in great numbers in the eastern parts of London, and attacked the chapels and houses of the Roman Catholics in that quarter, stripping them of their contents, which they threw into the street, and committed to the flames. They renewed their outrages on the following day, destroying several Romish chapels, and demolished the house of Sir George Saville, in resentment of his having brought into parliament the bill in favour of the Roman Catholics. On the 6th both houses met as usual; but finding that no business could be done, they adjourned to the 19th.

During this and the following days the rioters were absolute masters of the metropolis and its environs. Some of those who had been concerned in the demolition of the chapels belonging to foreign ministers having been seized and sent to Newgate, the mob collected before that prison, and demanded their immediate release; and this being refused, they proceeded to throw into the keeper's house firebrands and all manner of combustibles, which communicating fire to that and other parts of the building, the whole of the immense pile was soon in flames. Amidst this scene of confusion, the prisoners, amounting to about three hundred, were all released, including several who were under sentence of death. In the same manner they set fire to the King's Bench and Fleet prisons, and to a number of houses belonging to Roman Catholics. The terror occasioned by these incendiaries was such that most people hung out of their windows pieces of blue silk, which was the colour assumed by the rioters, and chalked on their doors and shutters the words "No Popery," by way of signifying they were friendly to their cause.

The night of the 7th of June concluded these horrors. Not less than thirty-six different conflagrations were counted at the same time. The Bank had been threatened, and was twice assailed; but being well guarded, both attempts failed. In the evening large bodies of troops arrived from all parts, happily in time to put a stop to the progress of the rioters, and falling upon them wherever they appeared, multitudes were killed and wounded, whilst num-

bers perished through intoxication. It was not until the afternoon of the 8th, however, that people began to recover from their consternation. During the greater part of the day, the disorders of the preceding night had created so terrible an alarm, that the shops were almost universally shut in every part of London. Nor were the melancholy effects of misguided zeal confined solely to the capital. The outrageous disposition of the populace was preparing to enact the like horrid scenes in other parts of England, and the mob actually rose in Hull, in Bristol, and in Bath; but through the timely interposition of the magistracy, these places were saved from their fury.

On the subsiding of this violent and unexpected commotion, Lord George Gordon was arrested, and committed close prisoner to the Tower after having undergone a long examination before the principal lords of the council.

On the 19th of June both houses met again pursuant to adjournment; and on this occasion a speech was read from the throne, acquainting them with the measures which had been taken in consequence of the disturbances, and assuring them of the readiness of the crown to concur in any measures that might contribute to the maintenance of the laws and liberties of the people. The speech was highly approved; but the conduct of administration was severely censured, and charged with unpardonable neglect for not calling forth the civil power, and employing the military in due time to obviate the mischiefs which had been committed. Ministry excused itself, however, on the ground of not having sufficient strength to answer all the demands of assistance that were made during the riots, and the absolute impossibility of suppressing them till the arrival of troops from the country. The various petitions which had been presented for the repeal of the act which had occasioned the riots, were now taken into consideration; but the house continued in the same mind as formerly. Nevertheless it was thought proper to yield somewhat to the prejudices of the people, by passing a bill for preventing persons of the popish persuasion from teaching or educating the children of Protestants; but this was afterwards thrown out by the Lords.

Nothing could have happened more opportunely for the ministry than the Protestant riots; for such were the alarm and terror occasioned by them, that the ardour which had been manifested in favour of popular meetings and associations, as they were called, for opposing the measures of government, was in a great degree suppressed. The county meetings were also represented as having a tendency, like the Protestant association, to bring on insurrections and rebellions; many began to consider all popular meetings as extremely dangerous; and among the commercial and monied classes, some were so panic-struck by the late riots, that all attention to the principles of the constitution was overruled by their anxiety about the preservation of their property. Had it not been for these events, it is probable that the spirit of opposition which then prevailed in the different counties would have compelled administration to make some concessions to the people.

In the suppression of these riots, however, the interference of the military without the command of the civil magistrate became a matter of suspicion to the country; and in the House of Lords the Duke of Richmond expressed a desire that some of his majesty's ministers would rise and give their lordships assurances, that the measures taken in order to suppress the riots, which were defensible only upon the ground of necessity, would be so stated, and that what had been illegally done, on the ground of necessity, would be cured by an act of indemnity. Various other observations were thrown out relative to the king's prerogative and to military law; upon which

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Lord Mansfield observed, that neither the king's prerogative nor military law had any thing to do with the conduct of government in their endeavours to quell the late outrages. All men, of all ranks, descriptions, and denominations, were bound, by their oath of allegiance, to interpose for the prevention of acts of high treason or felony, wherever any attempts to perpetrate such crimes were made in their presence, and were criminal if they refused to do so. In the whole of these proceedings, therefore, the military had not acted in their technical capacity as military, but had merely exercised their duty as civil men, which they, in common with other civil men, had both a right and an obligation to exercise. When a body of men were convened, without proceeding to the actual perpetration of treasonable or felonious acts, then the presence of the civil magistrate was necessary before the military could interpose at all; and for this reason, that as no acts of felony were committed, they could have no plea in their civil character for meddling at all. But by the statute law of the country, it became felonious in any combination of men to persevere in that combination after the riot act had been read by a justice of the peace; and this being done, they had then, and not till then, a constitutional reason for their interposition, namely, the privilege and duty of hindering the commission of felony whenever they had it in their power to do so.

This extraordinary doctrine was far from being agreeable to the nation in general, and was very freely censured in publications of all kinds. It was admitted, that if soldiers came accidentally as individuals to any place where felonies were committing, they might interfere, as well as others of the king's subjects, in the prevention of them. But this was a different case from that of bodies of armed troops being sent under officers commissioned by the king, and with orders to act against riotous and disorderly persons without any authority from the civil magistracy. The constitution of England knew no such character as a mercenary soldier, at the sole will of the executive power. Soldiers were held to their duty by laws which affected no other part of the community; and no soldier, as such, could be employed in the service of the constitution without a particular act of parliament in his favour. The idea that a military man was convertible into a soldier or a citizen, as royalty might move its sceptre, was a novelty got up for the present occasion. Mercenary armies were understood to consist of men who had either detached themselves or been forced from civil societies; and on these suppositions laws were made regarding their liberties and lives, such as no members of civil society could submit to. Soldiers were only tolerated by annual bills, and under repeated pretences; and the very idea of blending them with the common subjects of the state, and giving persons of their description a right of judging on its most important occurrences, would have filled our ancestors with horror. The laws tolerated an army for certain periods, and under certain restrictions; but there was no existing law which admitted the interference of the military in any of the operations of civil government. It was acknowledged that the late atrocious riots had rendered an extraordinary exertion of power absolutely necessary; but it was at the same time contended, that the interposition of the army in those outrages, without any authority from the civil magistrate, was an act of prerogative unconstitutional and illegal, although perfectly seasonable and beneficial. The public safety and benefit might sometimes excuse exertions of power, which would be injurious and tyrannical on ordinary occasions; but the utmost care ought to be taken that such extraordinary exertions should not be established as precedents, which might operate fatally to the constitution. If a large standing army was kept up,

and the king was understood to be invested with a power of ordering the troops to act discretionally whenever he should judge proper, without any authority from the civil magistrate, the people could have no possible security for their liberties.

We now proceed to notice the operations of the war, which, notwithstanding the powerful confederacy against Great Britain, were rather in her favour than otherwise. The Spaniards had commenced their military operations with the siege of Gibraltar, but with very little success; and the close of the year 1779, and beginning of 1780, were productive of considerable naval advantages to Great Britain. On the 18th of December 1779, the fleet under the command of Sir Hyde Parker in the West Indies captured nine sail of French merchant ships under the convoy of some ships of war; and two days afterwards he detached Rear-Admiral Rowley in pursuit of three large French ships, which were supposed to form part of M. la Motte-Piquet's squadron returning from Grenada. About the same time several other vessels were taken by the same squadron commanded by Sir Hyde Parker. On the 8th of January 1780, Sir George Brydges Rodney, who had been intrusted with the command of a fleet, one object of the destination of which was the relief of Gibraltar, fell in with twenty-two sail of Spanish ships, and in a few hours captured the whole fleet. In little more than a week afterwards the same fortunate admiral met with still more signal success. On the 16th of the month he engaged, near Cape St Vincent, a Spanish fleet, consisting of eleven sail of the line and two frigates, under the command of Don Juan de Langara. The Spaniards made a gallant defence; but four of their largest ships were taken, and carried into Gibraltar. These were, the *Phoenix* of eighty guns and seven hundred men, on board of which was the Admiral Don Juan de Langara; the *Monarca*, of seventy guns and six hundred men, Don Antonio Oyarvide commander; the *Princessa*, of seventy guns and six hundred men, Don Manuel de Leon commander; and the *Diligente*, of seventy guns and six hundred men, Don Antonio Abornoz commander. Two other seventy gun ships were also taken; but one of them was driven on shore on the breakers and lost, and the other was likewise driven on shore, but afterwards recovered. Four ships of the line and the two frigates escaped; but two of the former were much damaged in the action, during which one ship, the *San Domingo*, of seventy guns and six hundred men, was blown up. The five men of war taken were remarkably fine ships, and being afterwards completely refitted and manned, were put into the English line of battle. The Spanish admiral and his officers applied to Sir George Rodney to obtain the liberty of returning to Spain upon their parole of honour; but this he declined for some time, having received information that a great number of British seamen, who ought to have been released, were then prisoners in Spain. However, having afterwards received assurances that these captives would be immediately set at liberty, he released the Spanish admiral and officers upon their parole; and the prisoners in general were treated with a generosity and humanity which made a great impression upon the court of Madrid and the Spanish nation.

When Admiral Rodney had supplied the garrison of Gibraltar with provisions, ammunition, and money, he proceeded on his voyage to the West Indies; having sent home part of his fleet, with the Spanish prizes, under the command of Rear-Admiral Digby. On the twentieth of March an action was fought in the West Indies, between some French and English men of war, the former under the command of M. de la Motte-Piquet, and the latter, forming part of Sir Peter Parker's squadron, under that of Commodore Cornwallis. The contest was maintained

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Soon after Admiral Rodney had arrived in the West Indies, and assumed the command of his majesty's ships at the Leeward Islands, an action took place between the fleet under his orders and that of the French under the command of Count de Guichen. This occurred on the 17th of April. The British squadron consisted of twenty ships of the line, besides frigates; and the French fleet of twenty-three ships of the line, and several frigates. The action began a little before one, and continued till about a quarter after four in the afternoon. Admiral Rodney was on board the *Sandwich*, a ninety gun ship, which beat three of the French ships out of their line of battle, and entirely broke it. But the *Sandwich* and several other ships were so much crippled that an immediate pursuit was impossible, without compromising the safety of the disabled ships. The victory was accordingly claimed by both sides, but no ship was taken on either, and the French retired to Guadeloupe. Admiral Rodney's ship, the *Sandwich*, had suffered so much, that for twenty-four hours she was with difficulty kept above water. Of the British upwards of three hundred were killed and wounded in this engagement. On the 15th of May another action took place between the same commanders. But as it did not commence till near seven in the evening, and only a few ships were engaged, nothing decisive took place. The fleets met again on the 19th of the same month, when a third action ensued; but this, like the former, terminated without any material advantage to either side. On this occasion the British lost upwards of two hundred men killed and wounded; while, according to the French accounts, the total loss sustained by the enemy in the three actions, amounted to nearly a thousand killed and wounded. The preceding details show that the French at this time had a formidable fleet in the West Indies; and its force was augmented in June by the junction of a Spanish squadron near the island of Dominica; so that the French and Spanish fleets, when united, amounted to thirty-six sail of the line. Notwithstanding their superiority, however, they did not attack any of the British islands, nor even reconnoitre the fleet under the command of Sir George Brydges Rodney, which then lay at anchor in Gros Islet bay. By the vigilance and good conduct of the admiral, indeed, their efforts were in a great measure paralysed; and so sensible were the inhabitants of these islands of his services, that the houses of assembly of St Christophers and Nevis presented addresses to him, testifying their gratitude for the security which they enjoyed in consequence of his spirited and seasonable exertions.

In the month of June, Admiral Geary, who commanded the grand fleet, took twelve valuable merchant ships bound from Port-au-Prince to Bourdeaux and other ports of France; but in the month of July a very unexpected and important capture was made by the Spaniards, which excited considerable alarm in Great Britain. On the 8th of August, Captain Moutray, who had under his command the *Ramillies* of seventy-four guns, and two frigates, with a fleet of merchantmen bound for the East and West Indies under convoy, had the misfortune to fall in with the combined fleets of France and Spain, which had sailed from Cadiz the preceding day. The *Ramillies* and the two frigates escaped; but the rest were so completely surrounded, that five East Indiamen, and fifty merchant ships bound for the West Indies, were taken. This was one of the most complete naval captures ever made, and proved a heavy stroke to the commerce of Great Britain. The prize, however, great as it was, scarcely compensated the Spaniards for the capture of Fort Omoa, where upwards of

three millions of dollars were secured by the victors, and other valuable commodities, including twenty-five quintals of quicksilver, for extracting the precious metals from their ores, and the loss of which consequently rendered the mines useless.

But whilst the British were making the most vigorous efforts, and upon the whole gaining advantages over the powers who opposed them in the field, enemies were raised up throughout all Europe, who, by reason of their acting indirectly, could neither be opposed nor resisted. The power which most decidedly manifested its hostile intentions was Holland; but besides this, a most formidable confederacy, under the title of the Armed Neutrality, was formed, evidently with the design of crushing the power of Great Britain. Of this powerful confederacy the empress of Russia avowed herself the head; and her resolution was intimated on the 26th of February 1780, in a declaration addressed to the courts of London, Versailles, and Madrid. In this paper it was alleged, that her imperial majesty's subjects had often been molested in their navigation, and retarded in their operations, by the ships and privateers of the belligerent powers; that she found herself under the necessity of removing the vexations which were offered to the commerce of Russia, as well as to the liberty of commerce in general, by all the means compatible with her dignity and the welfare of her subjects; but that before adopting any serious measures, and to prevent all new misunderstandings, she thought it just and equitable to expose to the eyes of all Europe the principles which she had adopted as the guides of her conduct.

And these were contained in the following propositions: First, that neutral ships should enjoy a free navigation, even from port to port, and on the coasts of the belligerent powers; secondly, that all effects belonging to the subjects of the belligerent powers should be looked upon as free on board such neutral ships, excepting only such goods as were stipulated contraband; thirdly, that the principles recognised, and the articles enumerated as contraband, in the treaties between Great Britain and Russia in 1734 and 1766, should still be adhered to. In the former it was provided, that "the subjects of either party may freely pass, repass, and trade in all countries which now are, or hereafter shall be, at enmity with the other of the said parties, places actually blocked up or besieged only excepted, provided they do not carry any warlike stores or ammunition to the enemy," whilst, "as for all other effects, their ships, passengers, and goods, shall be free and unmolested; but," that "cannons, mortars, or other warlike utensils, in any quantity beyond what may be necessary for the ship's provision, and may properly appertain to and be judged necessary for every man of the ship's crew, or for each passenger, shall be deemed ammunition of war; and if any such be found, they may seize and confiscate the same according to law; but neither the vessels, passengers, nor the rest of the goods, shall be detained for that reason, or hindered from pursuing their voyage." And in the treaty of 1766 the same enumeration was given of the goods stipulated as contraband, as in the treaty of 1734. Her imperial majesty further proposed, fourthly, that in order to determine what characterizes a port blocked up, that denomination should not be granted, except to places before which there were actually a number of enemy's ships stationed near enough to render its entry dangerous; and, lastly, that these principles should serve as rules in judicial proceedings and in sentences as to the legality of prizes. Her imperial majesty declared, that she was firmly resolved to maintain these principles; that, in order to protect the honour of her flag and the security of the commerce and navigation of her subjects, she had given an order to fit out a considerable naval force; that

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The memorial of the empress of Russia, though proceeding upon principles unfavourable to the views of Great Britain, and incompatible with her maritime superiority, received a civil answer from that court; but other powers, as might have been expected, received it with far greater cordiality. In the answer of France it was observed, that what her imperial majesty claimed from the belligerent powers was nothing more than the rules prescribed to the French navy; the execution of which was maintained with an exactness known and applauded by all Europe. Strong approbation was expressed of the principles and views of her imperial majesty; and it was declared, that from the measures now adopted by Russia, solid advantages would undoubtedly result, not only to her subjects, but also to those of all nations. Sweden and Denmark likewise acceded formally to the armed neutrality proposed by Russia; and the States-general, after an interval of some months, followed their example. It was further resolved by the parties to this armed league, to make common cause at sea against any of the belligerent powers who should violate, with respect to neutral nations, the principles which had been laid down in the memorial of Russia.

But though the British ministry could not openly engage in war with all the other powers of Europe, they determined to take signal vengeance on the Dutch, whose base ingratitude and perfidy now became a subject of general speculation. It has already been observed, that ever since the commencement of hostilities with the Americans, the Dutch had shown a decided inclination in their favour; and this partiality continued to be evinced to a degree beyond what might have been expected from the natural avidity of a mercantile people. Frequent memorials and remonstrances had in consequence passed between the two nations, and the breach gradually grew wider and wider, until at last matters came to extremities, by a discovery that the town of Amsterdam was about to enter into a commercial treaty with America. This came to light in the beginning of September 1780, by the capture of Mr Laurens, lately president of the American congress, and who had been empowered by that

body to conclude a treaty with Holland. Mr Laurens himself was instantly committed prisoner to the Tower, and a spirited remonstrance was addressed to the states of Holland, requiring a formal disavowal of the transaction. The states, however, answered evasively, that they would take the matter into consideration according to the forms and usages of the country, and that a reply would be given as soon as the nature of their government would admit.

The British government could not possibly mistake this pitiful equivocation; and accordingly the most vigorous measures were instantly resolved on. On the 25th of January 1781, it was announced to the House of Commons that his majesty had directed letters of marque and reprisal to be issued against the States-general and their subjects. For the causes and motives of his majesty's conduct in this respect, the house were referred to a public manifesto against that republic, which had been ordered to be laid before parliament. The charges against the republic were briefly summed up by Lord North in his speech on the occasion. The states, he said, had, in open violation of treaties, not only refused to give Great Britain that assistance which those treaties entitled her to claim when attacked by the house of Bourbon, but had also, in direct violation of the law of nations, contributed to furnish France with warlike stores, and had now at length thought proper to countenance the magistracy of Amsterdam in the insult which they had offered to this country, by entering into a treaty with the rebellious colonies of Great Britain, as free and independent states. By the treaty of 1678, it had been stipulated, that in case Great Britain was attacked by the house of Bourbon, she had a right to take her choice of either calling upon the States-general to become parties in the war, and to attack the house of Bourbon within two months, or of requiring an aid of six thousand troops and twenty ships of war, which the states were to furnish immediately after the claim was made. But though this country had always preserved inviolate her faith with Holland, yet that republic had refused to fulfil the terms of this treaty. The States-general had also suffered Paul Jones, a Scotsman, and a pirate, acting without legal authority from any acknowledged government, to bring British ships into their ports, and to refit there.¹ A rebel privateer had in like manner been saluted at the Dutch island of St Eustatius, after she had been suffered to capture two British ships within cannon-shot of their forts and castles. A memorial had been presented at the Hague in June 1779, on the breaking out of the war with Spain, to claim the aid we were entitled to require by the treaty of 1678; but of this not the least notice had been taken on the part of the states. Two other notices had since been delivered, each of which met with the same reception. The British ministry had done all in their power to bring the states to a true sense of their interest; and when the necessity of the case compelled them to seize on the Dutch ships carrying stores to France, they had paid the full value of the cargoes, and returned the ships; so that neither the private merchant, the private adventurer, nor the

¹ This man, who had formerly been a servant in Lord Selkirk's house, had landed in 1778, and plundered it of the plate, but without doing any further mischief. The action, however, proved very disagreeable to his own party; and, at the desire of Dr Franklin, the plate was afterwards restored. After this exploit he attempted to set fire to the town of Whitehaven, but without success. In 1779 he made a descent on the coast of Ireland, but without committing any act of hostility: his people indeed carried off some sheep and oxen, but their captain paid liberally for what they had taken. In the month of September 1779, he appeared in the Frith of Forth with several prizes, and advanced up above the island of Inchkeith, so as to be nearly opposite to Leith. His design was supposed to have been to burn the shipping there; but he was prevented from attempting this by a strong westerly wind; and such measures were also taken for the defence of the harbour, by erecting batteries and otherwise, that he would probably have miscarried had any attempt been made by him. On leaving the coast of Scotland he fell in with the Serapis and Scarborough, both of which he took after a desperate engagement, in which these vessels were reduced to almost total wrecks. These prizes were carried by Jones into a Dutch harbour; and it was this transaction to which Lord North now alluded. He was called a pirate, on account of his not being at that time properly furnished with a commission either from France or America; though this was denied by the opposite party.

states, had suffered any loss.' France only had felt the inconvenience, by her being deprived of that assistance which she would have received from those cargoes. The minister lamented the necessity of a war with Holland; but it appeared to him to be unavoidable. The difficulties with which the nation had to struggle were certainly great; but they were by no means insuperable. He was neither desirous of concealing their magnitude, nor afraid to meet them, great as they must be acknowledged; convinced, that when the force of this country was fully exerted, it would be found equal to the contest, and that the only means of obtaining an honourable and a just peace, was to show ourselves capable of carrying on the war with spirit and vigour.

But before this resolution could have been communicated officially to the naval commanders in the West Indies, the Dutch were actually attacked. The island of St Eustatius was, on the 3d of February 1781, summoned by Admiral Rodney and General Vaughan to surrender to the arms of Great Britain, and only one hour was given for consideration. Submission was inevitable. The island accordingly surrendered; the property found on it was confiscated, and a sale instituted, with circumstances of rapacity which afterwards became the subject of a discussion in parliament, and drew upon the nation the ill will of all Europe. The Dutch in fact seem to have acted with great imprudence, and, notwithstanding their provoking conduct towards Britain, to have made no preparations for war in the event of being attacked. But in spite of this inactivity, they still retained much of their ancient valour, and were in fact the most formidable naval enemies whom Britain had to contend with.

By August 1781 they had equipped a considerable squadron, the command of which was given to Rear-admiral Zoutman; and on the 5th of that month this squadron fell in with the British fleet commanded by Admiral Hyde Parker. The force under Zoutman consisted, according to the Dutch account, of one ship of seventy-four guns, one of sixty-eight, one of sixty-four, three of fifty-four, and one of forty-four, besides frigates; but the English account states the hostile fleet to have consisted of eight two-decked ships. No gun was fired on either side till the fleets were within half musket-shot distance. The action began about eight in the morning, and continued with the utmost fury for three hours and forty minutes. Both sides fought with equal ardour, and little advantage was gained by either. When the action ceased, both squadrons lay like logs on the water; but after a time the Dutch ships of war, with their convoy, bore away for the Texel, whilst the English were too much disabled to follow them. A Dutch seventy-four gun ship sunk soon after the action. On board the British fleet upwards of four hundred were killed and wounded; and the loss of the Dutch was probably greater. Admiral Zoutman, in his account of the engagement, states that his men fought like lions; and the British admiral, in the dispatch transmitted by him to the admiralty, observes that his majesty's officers and men behaved with great bravery, nor did the enemy show less gallantry.

The impossibility of crushing the power of Great Britain by any force whatever was now beginning to be evident even to her most inveterate enemies. In Europe, the utmost efforts of France and Spain were able to effect nothing more than the annual parade of a mighty fleet in the Channel; and this called forth the apparition of a British fleet, so formidable that the enemy never durst attack it. The states of Holland had sent out their force; and this too was opposed by one which, if insufficient to conquer, was at least able to prevent their effecting any thing detrimental to our possessions. In the East Indies

the united powers of the French and Indians had been conquered, and the Dutch settlements had suffered severely.

In the year 1781, however, the British naval power in the West Indies seemed to sink, and some events took place which threatened serious results. This was owing to the great superiority of the combined fleets of France and Spain, by which that of Britain was now so far outnumbered, that it could not achieve any thing of consequence. An ineffectual attempt was made by Admiral Rodney on the island of St Vincents, and an indecisive engagement took place on the 28th of April 1781, between Admiral Hood and the Count de Grasse, the event of which, however, was certainly honourable to Britain, as the French had a superiority of six ships of the line. But the damage done to the British ships having obliged them to retire to Barbadoes to refit, the French availed themselves of the opportunity to effect a descent on the island of Tobago; and although the governor made a gallant resistance, he was at last obliged to surrender. Admiral Rodney had sent Rear-admiral Drake with six sail of the line, three frigates, and some troops, to the assistance of the island; but they were dispatched too late, as the island had capitulated before the intended relief could have reached it.

But the great and decisive stroke, which happened this year, was the capture of Lord Cornwallis, with the division of the army under his command, at Yorktown. This was a great calamity; and other events were sufficiently mortifying. The province of West Florida had been reduced by the Spaniards; Minorca was besieged by them with every prospect of success; the island of St Eustatius had been surprised by the French; and in short every circumstance seemed to proclaim the necessity of putting an end to a war so calamitous and destructive. But all the disasters which had yet happened were insufficient to induce the ministry to abandon their favourite scheme of war with the colonies.

The parliament met on the 27th of November 1781. It has already been stated, that in the year 1780 the ministry had sustained a defeat so signal as seemed to prognosticate the ruin of their power. They had indeed afterwards acquired a majority, and the terror produced by the riots had contributed not a little to the re-establishment of their influence. The remembrance of what had passed, however, most probably induced them to dissolve parliament; whilst the successes at Charlestown and in other parts of America once more gave them a decided majority in both houses. But the disasters of the year 1781 involved them in the most serious difficulties. In the speech from the throne, his majesty observed, that the war was still unhappily prolonged by the restless ambition which had first excited the enemies of his crown and people to commence it. But he should not discharge the trust committed to the sovereign of a free people, nor make a suitable return to his subjects for their zealous and affectionate attachment to him, if he consented to sacrifice, either to his own desire of peace, or to their temporary ease and relief, those essential rights and permanent interests, upon the maintenance and preservation of which the future strength and security of Great Britain must depend. The events of war, he said, had been very unfortunate to his arms in Virginia, having ended in the loss of his forces in that province; but the misfortune in that quarter called loudly for the firm concurrence and assistance of parliament, in order to frustrate the designs of the enemy, which were as prejudicial to the real interests of America as to those of Great Britain. His majesty regretted much the additional burdens which a continuance of the war would unavoidably bring upon his subjects; but he still declared his perfect conviction of the justice of his cause, and hoped that, by the concurrence and support of his parliament, by the valour of his

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A motion for an address of thanks, couched in the usual style, was made in the House of Commons; and it was urged, that a durable and advantageous peace could result only from the firm, vigorous, and unremitting prosecution of the war, and that the present was not the time to relinquish hope, but to resolve upon exertion. The motion, however, was vehemently opposed by Mr Fox and Mr Burke. The latter remarked, that if there could be a greater misfortune than had already been inflicted on this kingdom in the present disgraceful contest, it was hearing men rise up in the great assembly of the nation to vindicate such measures. If the ministry and the parliament were not to be taught by experience,—if neither calamities could make them feel, nor the voice of God make them wise,—what had this fallen and undone country to hope for? A battle might be lost, an enterprise might miscarry, an island might be captured, an army might be lost in the best of causes, and even under a system of vigour and foresight; because the battle, after all the wisdom and bravery of man, was in the hands of heaven; and if either or all of these calamities had happened in a good cause, and under the auspices of a vigilant administration, a brave people would not despair. But it was not so in the present case. Amidst all their sufferings and their misfortunes, they saw nothing so distressing as the weakness or wickedness of their ministers. They seemed still determined to go on, without plan and without foresight, in this war of calamities; for every thing that happened in it was a calamity. He considered them all alike, victories and defeats; towns taken and towns evacuated; new generals appointed, and old generals recalled; they were all alike calamities in his eyes, for they all spurred us on to this fatal business. Victories gave us hopes, defeats made us desperate, and both instigated us to go on. In the course of the debate, it was contended on the part of administration, and particularly by Lord North, that by the address, as originally proposed, the house did not pledge themselves to any continuance of the American war; but this was strongly denied by the gentlemen in opposition. However, the point was at last decided in favour of ministry by a large majority; and the address was then carried as originally proposed. In the House of Peers, a motion for an address similar to that of the House of Commons was made by Lord Southampton, and seconded by Lord Walsingham; but it was vigorously opposed by the Earl of Shelburne and the Duke of Richmond, whilst Lord Stormont and the lord chancellor defended the course adopted by ministers; and the address was ultimately carried by a majority of more than two to one. A short protest against the address was, however, entered by the Duke of Richmond, the Marquis of Rockingham, and Earl Fitzwilliam; in which they declared that they dissented, for reasons too often urged in vain for the last seven years, against the ruinous prosecution of the unjust war carrying on by his majesty's ministers against the people of North America, and too fatally confirmed by repeated experience, and the disgraceful loss of a second army, to stand in need of repetition.

Though ministers thus succeeded in carrying the addresses in the usual form, they did not meet with equal success in their main design of carrying on the war. After the debate on the number of seamen, which was fixed at one hundred thousand for the ensuing year, Sir James Lowther moved as a resolution of the house, that the war carried on with America had been ineffectual for the purposes for which it was undertaken; and that all further

attempts to reduce that continent by force of arms would be in vain, and must be injurious to this country, by weakening her power of resisting her ancient and confederated enemies. This was supported by a number of arguments interlarded with the most severe reflections on the conduct of ministers. But the motion was opposed by Lord North, who said that, if agreed to by the house, it would put an end to the American war in every shape, and even cripple the hands of government in other respects. It would point out to the enemies of this country what were to be the mode and conduct of the war; and thus inform the enemy in what manner they might best point their operations against this country during the next campaign. With respect to the American war in general, his lordship acknowledged that it had been extremely unfortunate; but he affirmed that the misfortunes and calamities which had attended it, though of a most serious and fatal nature, were matters rather to be deplored and lamented as the events of war, in themselves perpetually uncertain, than to be ascribed to any criminality in ministers. He added, that though he totally disapproved of the motion, yet he was willing to declare it to be his opinion, that it would not be wise nor right to go on with the American war as we had hitherto done; that is, to send armies to traverse from south to north the provinces in their interior parts, as had been done in a late case, and which had failed of producing the intended and desired effect.

On the other hand, General Burgoyne observed, that declaring a design of maintaining posts in America, of the nature of New York, was declaring a design of offensive war; and that such a maintenance of posts would prove an improvident and preposterous mode of warfare. With regard to the American war, the impracticability of it was a sufficient justification for supporting the present motion. But he was now convinced that the principle of the American war was wrong, though he had not been of that opinion when he formerly engaged in the service in America. He had been brought to this conviction by observing the uniform conduct and behaviour of the people of America. Passion, prejudice, and interest, might operate suddenly and partially; but when we saw one principle pervading the whole continent, and the Americans resolutely encountering difficulty and death for a course of years, it must be a strong vanity and presumption in our own minds which could lead us to imagine that they were not in the right. It was reason, and the finger of God alone, which implanted the same sentiment in three millions of people.

After some further debate, Sir James Lowther's motion was rejected by a majority of two hundred and twenty to one hundred and seventy-nine. This, however, was a majority in which the ministry had little reason to exult, as it was sufficiently apparent, from the numbers who voted against administration, that the uninfluenced sense of the house was clearly and decisively against any further prosecution of the American war.

Other arguments to the same purpose with those of General Burgoyne, just mentioned, were used in the debate on the army estimates. On the 14th of December, the secretary at war informed the house, that the whole force of the army, including the militia of this kingdom, required for the service of the year 1782, would amount to one hundred and eighty-six thousand two hundred and twenty men, and for this force the parliament had to provide. The sum required for these troops for pay, clothing, and other articles, amounted to four millions two hundred and twenty thousand pounds. This military force exceeded that of the last year by upwards of four thousand men; and the expense was consequently greater by upwards of twenty-nine thousand pounds. The increase was occasioned by the greater number of troops already sent, or then going, to

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Besides the grand question of the continuance of the American war, several other matters of smaller moment were agitated during this session, particularly the affair of St Eustatius, already mentioned, and an inquiry into the state of the navy. But on these, as on the greater question, the ministry prevailed, though not without a strength of opposition which they had seldom encountered before. A motion for censuring Lord Sandwich was lost only by nineteen; and so general was the desire for a change of administration, that it excited surprise how the ministry still retained their places. Nothing could place in a more striking point of view the detestation in which they were held, than the extreme repugnance to the admission of Lord George Germaine to the dignity of the peerage. On this occasion the affair of Minden was not only brought above board; but, after his actual investiture, and when he had taken his seat in the house, under the title of Lord Viscount Sackville, a debate ensued respecting the dishonour which the peers had sustained by his admission into their house. The Marquis of Caermarthen moved, that it was reprehensible in any minister, and highly derogatory to the honour of the house, to advise the crown to exercise its indisputable right of creating a peer, in favour of a person labouring under the heavy censure of a court-martial; and urged, in support of his motion, that the House of Peers being a court of honour, it behoved them most carefully to preserve that honour uncontaminated, and to endeavour to mark, as forcibly as possible, the disapprobation which they felt at receiving into their assembly, as a brother peer, a person stigmatized in the orderly books of every regiment in the ser-

vice. The Earl of Abingdon could not help conceiving, that although there was not a right of election, there must be a right of exclusion vested in the house, when the admission of any peer happened to be against the sense of its members; that he considered the admission of Lord George Germaine to a peerage as an insufferable indignity to the house, and as an outrageous insult to the people; that it was an indignity to that house, inasmuch as it connected them with one whom every soldier was forbidden to associate withal; and that it was an insult to the people, as the person now raised to the peerage had done nothing to merit honours superior to his fellow-citizens. Lord Sackville defended himself as well as he could against this attack. He denied that he knew by whose advice he had been raised to the peerage; he impugned the justice of the sentence of the court-martial; he represented himself as the victim of an acrimony and hostility without example; he adverted to the time which had elapsed since the sentence of the court-martial was pronounced, and to the political offices which he had since been called to fill; and he contended that his elevation to the dignity of the peerage was virtually a repeal of the proceedings of the military tribunal in question. The Duke of Richmond replied with great ability to the various pleas which Lord Sackville had brought forward in his own justification. In particular, he observed, that their lordships were not ignorant, that the noble viscount rested a considerable part of the vindication of his behaviour at the battle of Minden upon the supposed existence of a striking variation in the orders delivered from Prince Ferdinand to the commander of the cavalry. It was understood that the first order was, that the *cavalry* should advance; and the second, that the *British cavalry* should advance. Yet even under these supposed contradictory orders, it was evident that the noble lord ought to have advanced, and, certainly, the distance being short, he enjoyed a sufficient space of time for obedience to his instructions. Lord Southampton, who delivered one of the messages, was now present in the house; and it would seem that he had no choice on this occasion but to acknowledge, either that he did not properly deliver such orders to the noble viscount, or that the latter, having properly received them, neglected to obey them. But whatever difficulties might have arisen during the endeavours to determine exactly how much time had actually been lost in consequence of the non-compliance of Lord Sackville with the orders which he received, he could with much facility have solved what all the witnesses examined as to this point were not able positively to determine. If, summoned as he was to appear upon the trial, his deposition had been called for, he could have proved, because he held all the while his watch in his hand, and seldom ceased to look at it, that the time lost by the noble viscount delaying to advance, under pretence of receiving such contradictory orders as made it impossible for him to discover whether he ought to advance with the *whole* cavalry, or only with the *British* cavalry, was *one hour and a half*. It was therefore extremely evident that the noble lord had had it in his power to bring up the cavalry from the distance of a mile and a quarter; the consequence of which would have been that, by joining in the battle, they might have rendered the victory more brilliant and decisive. But before the arrival of this cavalry, the engagement was concluded. Such was the testimony, said the duke, which, having had the honour to serve at the battle of Minden under Prince Ferdinand of Brunswick, he must have borne, if, being summoned, the members of the court-martial had thought proper to have examined him on the trial. Under such circumstances, the noble viscount could have but little reason to complain of the sentence of the court-martial, of the orders which

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Reign of George III. followed it, or of the loss of his commission. The motion was powerfully supported by other arguments, both by the Duke of Richmond himself and by other peers; but it was nevertheless rejected by a large majority. A protest was however entered, signed by nine peers, in which the sentence and the public orders were particularly stated; and in which they declared, that they looked upon the raising to the peerage a person so circumstanced as a measure fatal to the interests as well as to the glory of the crown, and to the dignity of the house.

The ruinous tendency of the American war was now so strikingly apparent, that it became necessary for those who had a just sense of the dangerous situation of the country, and wished well to its interests, to exert their most vigorous efforts to put an end to so fatal a contest. Accordingly, on the 22d of February, a motion was made by General Conway, that an humble address should be presented to his majesty, imploring him to take into his consideration the many and great calamities which had attended this unfortunate war, and to listen to the humble prayer and advice of his faithful Commons, that the war on the continent of North America might no longer be pursued for the impracticable purpose of reducing that country to obedience by force. The motion was seconded by Lord John Cavendish, but vigorously opposed by administration, who had still strength sufficient to carry their point, though only by a single vote, the motion being rejected by a hundred and ninety-four to a hundred and ninety-three.

The increasing power of the opposition now showed that the downfall of the ministry was at hand. The decision of the last question was considered as a victory gained by the former, and Mr Fox instantly gave notice that the subject would be resumed in a few days under another form. It was accordingly revived on the 27th of February, when a petition from the city of London was presented, soliciting the house to interpose in such a manner as to prevent any further prosecution of the American war; after which General Conway moved, as a resolution, that it was the opinion of the house that the further prosecution of offensive war on the continent of North America, for the purpose of reducing the revolted colonies to obedience by force, would be the means of weakening the efforts of this country against her European enemies, and would tend to increase the mutual enmity so fatal to the interests both of Great Britain and America. It appears from the journals, said the general, that from the days of Edward III. down to the present reign, parliament has at all times given advice to the crown in matters relating to war and peace. In the reign of Richard II. it was frequently done, and also in that of Henry IV. One remarkable instance of this occurred in the reign of Henry VII. when that prince consulted his parliament respecting the propriety of supporting the Duke of Brittany against France, and also of declaring war against the latter; and when he told his parliament that it was for no other purpose than to hear their advice on these heads that he called them together. In the reign of James I. the parliament interfered repeatedly with their advice respecting the palatinate, the match with Spain, and a declaration of war against that power. In the time of Charles I. there were similar interferences; and in the reign of his son Charles II. the parliament made repeated remonstrances, but particularly in 1674 and 1675, on the subject of the alliance with France, which, they urged, ought to be renounced, and at the same time recommended a strict union with the United Provinces. To some of these remonstrances, indeed, answers were returned not very satisfactory; and the parliament were informed that they were exceeding the line of their duty, and encroaching upon the prerogative of the crown. But so little did the Commons of those

days relish these answers, that they addressed the king to know who it was who had advised his majesty to return such answers to their loyal and constitutional remonstrances. In the reign of King William, repeated instances were to be found in the journals, of advice given by parliament relative to the Irish war and the war on the continent. The same thing occurred frequently in the reign of Queen Anne, who, in an address from the parliament, was advised not to make peace with France until Spain should be secured to Austria, and also not to consent to peace until Dunkirk should be demolished. In short, it was manifest from the whole history of English parliaments, that it was ever considered as constitutional for parliament to interfere, whenever it thought proper, in all matters so important as those of peace and war. Other arguments were urged in support of the motion, which was seconded by Lord Althorp; and petitions from the mayor, burgesses, and commonalty of the city of Bristol, and from the merchants, tradesmen, and inhabitants of that city, against the American war, were also read. But in order to evade coming to any immediate determination on the question, a proposition was made by the attorney-general, that a truce should be entered into with America, and a bill prepared to enable his majesty's ministers to treat on this ground; and under pretence of allowing time for this measure, he moved that the present debate be adjourned for a fortnight. This motion, however, was negatived by a majority of nineteen; and the original motion of General Conway was then put and carried without a division.

The general immediately followed up this victory with a motion for an address to the king, soliciting his majesty to put a stop to any further prosecution of offensive war against the colonies; which was agreed to, and presented to his majesty by the whole house on the 1st of March. On this occasion his majesty answered, that there were no objects nearer to his heart than the happiness and prosperity of his people; that, in pursuance of the advice of the Commons, he should take such measures as might appear conducive to the restoration of harmony between Great Britain and her revolted colonies; and that his efforts should be directed in the most effectual manner against our European enemies, until a peace could be obtained consistent with the interests and permanent welfare of the kingdom. The proceedings of the House of Commons gave general satisfaction; but the royal answer was not thought sufficiently explicit. Accordingly, on the 4th of March, General Conway moved that an humble address be presented to his majesty, to return his majesty the thanks of that house for his gracious answer to their last address; the house being convinced that, in the present circumstances of this country, nothing could so essentially promote those great objects of his majesty's paternal care for his people as the measures which his faithful Commons had most humbly but earnestly recommended to his majesty; and this motion was unanimously agreed to. The general then moved a resolution, that, after the solemn declaration of the opinion of the house, in their humble address presented to his majesty, and his majesty's assurance of his gracious intentions, the house would consider as enemies to his majesty and the country all who should endeavour to frustrate his majesty's paternal care for the happiness of his people, by advising the further prosecution of offensive war on the continent of North America. After some debate this motion was agreed to without a division; and, on the 6th, after a number of papers had been read in the House of Peers relative to the surrender of Earl Cornwallis and the army under his command, the Duke of Chandos moved, first, that, in the opinion of the house, the immediate cause of the capture of the army under Earl Cornwallis in Virginia, was the want of

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In spite of all these efforts, however, the ministry still kept their ground, and with astonishing resolution combated the force of opposition, which was daily increasing. On the 8th of March several resolutions were moved by Lord John Cavendish; one of which bore that the chief cause of the national misfortunes was the want of foresight and ability in his majesty's ministers; and another respected the immense sum expended on the war, which was alleged to be little less than a hundred millions. But all inquiry was still frustrated, and these motions were lost by a majority of ten. Meanwhile, as the unpopularity of Lord North was further increased by the proposal of some new taxes, particularly on soap, the carriage of goods, and places of entertainment, opposition determined if possible to force him to resign; and on the 15th of March it was moved by Sir John Rous that the nation could have no further confidence in the ministers who had the conduct of public affairs. Lord North endeavoured to vindicate his own administration. He affirmed that it could not be declared with truth that the national calamities originated from the measures of the present administration. The repeal of the American stamp-act, and the passing of the declaratory law, took place before his entrance into office. As a private member of parliament he gave his vote in favour of both, but as a minister he was not responsible for either. When he accepted office the times were scarcely less violent than the present. He approached the helm when others had deserted it; and, standing there, he had used his utmost efforts to assist his country. That the American war was just and requisite, and prosecuted for the purpose of supporting and maintaining the rights of the British legislature, was a position for the truth of which he would ever contend, whilst he enjoyed the power of arguing at all upon the subject. As to peace, he not only wished most earnestly for it, but also for the formation of such a ministry as might at once prove acceptable to the country, and cordially co-operate for the welfare and honour of the state. The house at length divided upon the question, when there appeared a majority of nine in favour of administration.

But notwithstanding this decision, it was well known that the ministry could not stand their ground; and, accordingly, four days after, when a motion similar to that by Sir John Rous was about to be made by the Earl of Surrey, Lord North informed the house that his majesty had come to a full determination to change his ministers; and that, in fact, those persons who had for some time conducted the public affairs were no longer his majesty's ministers. They were not now to be considered as men holding the reins of government and transacting measures of state, but merely as performing their official duty till other ministers were appointed to take their places. In consequence of the declaration of Lord North, the Earl of Surrey agreed to waive his intended motion, and, after some further debate, the house adjourned. And thus an end was put to an administration which had long been obnoxious to a great part of the nation, and whose removal contributed very much to allay those ferments by which every part of the British dominions had been agitated. Peace now became as much the object of ministry as war had been formerly. But before we proceed to any account of the negotiations for that desirable object, it will be necessary to notice the military events which disposed the other belligerent powers to an accommodation.

The ill success of Britain in America has already been taken notice of. The disaster of Cornwallis had produced a sincere desire of peace with America; but this could not be accomplished without making peace with France also; and that power was still haughty and elated with success. Minorca had now fallen into the hands of the Spaniards; and though the capture of a few miserable invalids, attended with such extreme difficulty as the Spaniards had experienced, ought rather to have intimidated them than otherwise, they now projected the most important conquests. Nothing less than the entire reduction of the British West India islands was contemplated by the allies; and indeed there was too much reason to suppose that this object was within their reach. In the beginning of the year 1782 the islands of Nevis and St Christophers were obliged to surrender to Count de Grasse the French admiral, and the Marquis de Bouillé, who had already signalized himself by several exploits; and Jamaica was marked out as the next victim. But the end of all these aspiring hopes was fast approaching. The advantages hitherto gained by the French in their naval engagements with the British fleet had proceeded entirely from their keeping at a great distance during the time of action, and from their good fortune and dexterity in gaining the wind. At last the French admiral De Grasse, prompted by his natural courage, or induced by circumstances, determined, after an indecisive action on the 9th of April 1782, to risk a close engagement with his formidable antagonist, Admiral Rodney. The action was brought on by the count shortening sail to prevent the loss of a disabled ship, by parting with which he might have avoided the disaster that followed. This memorable engagement took place off the island of Dominica, three days after the former. The British fleet consisted of thirty-seven ships of the line, and the French of thirty-four. The engagement commenced at seven o'clock in the morning, and continued with unremitting fury till half past six in the evening. It is said that no other signal was made by the admiral but the general one for action, and that for close combat. Sir George Rodney was on board the *Formidable*, a ship of ninety guns; and the Count de Grasse was on board the *Ville de Paris*, a ship of a hundred and ten guns, which had been presented to the French king by the city of Paris. In the course of the action, the *Formidable* fired nearly eighty broadsides; and for three hours the admiral's ship was involved in so thick a cloud of smoke that it was almost invisible to the officers and men of the rest of the fleet. The van division of the British fleet was commanded by Sir Samuel Hood, and the rear division by Rear-admiral Drake; and both these officers greatly distinguished themselves in the course of the action. But the decisive turn on this memorable day was given by a bold manœuvre of the *Formidable*, which, taking advantage of a favourable shift in the wind, passed through the French line, and threw them into irretrievable confusion. The first French ship that struck was the *Cæsar*, of seventy-four guns, the captain of which fought nobly, and fell in the action. When she struck she had scarcely a foot of canvass without a shot hole. Unfortunately, soon after she was taken possession of, she took fire by accident, and blew up, when about two hundred Frenchmen perished in her, together with an English lieutenant and ten English seamen. The *Glorieux* and the *Hector*, both seventy-four gun ships, were also taken by the British fleet; together with the *Ardent* of sixty-four guns; and a French seventy-four gun ship was also sunk in the engagement. It was almost dark when the *Ville de Paris*, on board of which the Count de Grasse had fought gallantly, struck her colours. Five thousand five hundred troops were on board the French fleet, and the havoc among them was very great, as well as among the

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French seamen. The British lost in killed and wounded about a thousand men. Captain Blair, who commanded the *Anson*, and several other officers, were killed in the action; and Lord Robert Manners, who commanded the *Resolution*, died of his wounds on his return home. It was universally allowed that in this engagement the French, notwithstanding their defeat, behaved with the greatest valour. De Grasse himself did not surrender till four hundred of his people were killed, and only the admiral and two others remained without a wound. The captain of the *Cæsar*, after his ensign-staff was shot away, and the ship almost battered to pieces, caused his colours to be nailed to the mast, and thus continued fighting till he was killed. The vessel, when taken, was a mere wreck. Other French officers behaved with equal resolution. The valour of the British requires no encomium; it was proved by their success on this glorious day.¹

This victory was a very fortunate circumstance both for the interest and the reputation of the British admiral. Before this event the new ministry had appointed Admiral Pigot to supersede him in the command in the West Indies; and it was understood that they meant to set on foot a rigid inquiry into the transactions at St Eustatius. But the splendour of this victory put an end to all thoughts of the kind; he received the thanks of both houses of parliament for his services; and he was created an English peer, by the title of Baron Rodney of Rodney Stoke, in the county of Somerset. Sir Samuel Hood was also created Baron Hood of Catherington, in the kingdom of Ireland; and Rear-admiral Drake and Captain Affleck were created baronets of Great Britain. Some attempts were also made, in the House of Commons, to procure a vote of censure against the new ministry for having recalled Lord Rodney; but the motions for this purpose were rejected by a large majority.

Though the designs of the French against Jamaica were now effectually frustrated, the victory was not followed by those beneficial results which many had expected from it; and none of the British islands which had been taken by the French in the West Indies were afterwards recaptured. Some of the ships which had been taken by Admiral Rodney were also lost at sea, particularly the *Ville de Paris*, *Glorieux*, and *Hector*; and a British man of war, the *Centaur*, of seventy-four guns, foundered at sea on the 24th of September 1782. The Jamaica homeward-bound fleet was also dispersed by a hurricane off the banks of Newfoundland, when the *Ramillies* of seventy-four guns and several merchantmen foundered. About this time the British navy sustained a very considerable loss at home, by the *Royal George*, of a hundred guns, being upset and sunk at Portsmouth. This melancholy accident, which happened on the 29th of August, was occasioned by a partial heel given to the ship, in order to cleanse and sweeten her. The guns on one side being removed to the other, or at least the greater part of them, and her lower deck ports not being lashed in, the ship thwarted on the tide with a squall from the north-west, filled with water, and sunk in the space of about three minutes. Admiral Kempenfelt, a number of other officers, and upwards of four hundred seamen and two hun-

dred women, besides children, perished on this occasion. The prosecution of the war was thus attended with disasters and difficulties to all parties. The signal defeat above mentioned not only secured the island of Jamaica against the attempts of the French, but prevented them from entertaining any other project than that of distressing commerce.

In the beginning of May an expedition was undertaken to the remote and inhospitable regions of Hudson's Bay; and though no force existed there capable of making any resistance, a seventy-four gun ship and two thirty-six gun frigates were employed in the service. All the people in that part of the world either fled or surrendered at the first summons. The loss of the Hudson's Bay Company, on this occasion, amounted to £500,000; but the humanity of the French commander was conspicuous, in leaving a sufficient quantity of provisions and stores of all kinds for the use of the British who had fled at his approach. Another expedition was undertaken by the Spaniards to the Bahama Islands, where an equally easy conquest was obtained. The island of Providence, defended only by three hundred and sixty men, could make no resistance when attacked by five thousand. An honourable capitulation was granted by the victors, who likewise treated the garrison with kindness. Some settlements on the Mosquito shore were also taken by the Spaniards; but the Bay-men, assisted by their negroes, bravely retook some of them; and having formed a little army of the Indians in those parts, headed by Colonel Despard, they attacked and carried the posts on the Black River, making prisoners of about eight hundred Spanish troops. The greatest disaster which befel this power, however, was their failure before Gibraltar, which happened in the month of September 1782, and was accompanied with such circumstances of horror and destruction as evinced the absurdity of persisting in the enterprise. Thus all parties felt that it was high time to put an end to the contest. The affair of Cornwallis had shown that it was impossible for Britain to conquer America; the defeat of De Grasse had rendered the reduction of the British possessions in the West Indies impracticable by the French; the final repulse before Gibraltar, and its relief afterwards by the British fleet, put an end to that favourite enterprise, in which almost the whole strength of Spain had been employed; and the engagement of the Dutch with Admiral Parker showed them that nothing could be gained by a naval war with Britain.

The events which led to the removal of Lord North and the other ministers who had so long directed public measures in this kingdom have been already noticed. On this occasion it was said that his majesty expressed considerable agitation of mind at being in a manner compelled to make an entire change in his councils; for the members in opposition would form no coalition with any of the old ministry, the lord chancellor only excepted. On the 30th of March 1782, the Marquis of Rockingham was appointed first lord of the treasury; Lord John Cavendish chancellor of the exchequer; the Earl of Shelburne and Mr Fox principal secretaries of state; Lord Camden president of the council; the Duke of Richmond master of the ordnance; the Duke of Grafton lord privy seal; Ad-

¹ The Count de Grasse, after his defeat, was received on board the *Barfleur* man of war, and afterwards landed on the island of Jamaica, where he was treated with great respect. After continuing there some time, he was conveyed to England, and accommodated with a suite of apartments at the royal hotel in Pall-mall. His sword, which he had delivered up, according to the usual custom, to Admiral Rodney, was returned to him by the king. This etiquette enabled him to appear at court, where he was received by their majesties and the royal family in a manner suitable to his rank. From the time of his arrival in London to his departure, which was on the 12th of August 1782, he was visited by many persons of the first fashion and distinction, and was much employed in paying visits to the great officers of state and some of the principal nobility of the kingdom, by whom he was entertained in a very sumptuous and hospitable style. He received, indeed, every mark of civility which the British nation could bestow; and was treated with much respect even by the common people, from the opinion that was generally entertained of his valour and merit.

Reign of George III. of miral Keppel first lord of the admiralty; General Conway commander in chief of all the forces in Great Britain; Mr Thomas Townshend secretary at war; Mr Burke paymaster of the forces; and Colonel Barré treasurer of the navy. Other offices and honours were likewise conferred on different members of the opposition; and some were raised to the peerage, particularly Admiral Keppel, Sir Fletcher Norton, and Mr Dunning.

The first business in which the new ministry engaged was taking the necessary measures for effecting a general peace. No time, in fact, was lost in the pursuit of this great object; and the empress of Russia, having offered her mediation, in order to restore peace between Great Britain and Holland, Mr Secretary Fox, within two days after his entrance in office, wrote a letter to Simolin, the Russian minister in London, informing him that his majesty was ready to enter into negotiations for peace, on the basis of the treaty of 1674; and that, in order to facilitate such negotiations, he was willing to give immediate orders for a suspension of hostilities, if the States-general were disposed to agree to that measure. But the states of Holland did not appear inclined to enter into a separate peace; nor perhaps would it have been agreeable to the principles of sound policy if they had consented to any propositions of this kind. But immediately after the change of ministry, negotiations for a general peace were commenced at Paris; and Mr Grenville was invested with full powers to treat with all the parties at war, and to propose the independence of the thirteen United Provinces of North America in the first instance, instead of making it a condition of a general treaty. Admiral Digby and General Carleton were also directed to acquaint the American congress with the pacific views of the British court, and with the offer made to acknowledge the independence of the United States.

But before this work of pacification had made any considerable progress, the new ministry sustained an irreparable loss by the death of the Marquis of Rockingham in July 1782. Even before this event, considerable apprehensions were entertained of their want of union; but the death of the nobleman just mentioned occasioned an absolute dissolution. The Earl of Shelburne, who succeeded him as first lord of the treasury, proved so disagreeable to some of his colleagues, that Mr Fox, Lord John Cavendish, Mr Burke, Mr Frederick Montague, and two or three others, instantly resigned. Others, however, though little attached to the earl, continued in their places; and his lordship found means to attach to his interest Mr William Pitt, son to the late Earl of Chatham. Though then in an early stage of life, that gentleman had already distinguished himself greatly in parliament, and was now prevailed upon to accept the office of chancellor. The seceding members of the cabinet were at pains to explain to the house their motives for taking this step, which were in general a suspicion that matters would be managed differently from the plan which they had proposed while in office, and particularly that American independence would not be acknowledged. But this was positively denied at the time, and with truth, as appeared by the event. There appeared, indeed, a duplicity in the conduct of the Earl of Shelburne not easily to be accounted for. Even after it had been intimated by General Carleton and Admiral Digby that the independence of the United Provinces would be conceded by his majesty in the first instance, instead of making it a condition of a provisional treaty, his lordship said, that "he had formerly been, and still was, of opinion, that whenever the independence of America was acknowledged by the British parliament, the sun of England's glory was set for ever." This had been the opinion of Lord Chatham and other able statesmen; nevertheless, as the majority of the cabinet were of a contrary way of thinking, he acquiesced

in the measure, though his ideas were different. He did not wish to see England's sun set for ever, but looked for a spark to be left which might light us up a new day. He wished to God that he had been deputed to congress, that he might plead the cause of America as well as Britain. He was convinced that the liberties of the former were gone as soon as the independence of the states was allowed; and he concluded his speech with observing, that he was not afraid of his expressions being repeated in America, there being great numbers there who were of the same opinion with him, and perceived ruin and independence linked together."

If his lordship really expected that by a flourish of rhetoric he could persuade the Americans to abandon a system for which they had fought so desperately, he greatly overrated his own powers, and mistook the men with whom he had to deal. No obstruction, however, arose to the general pacification. As early as the 30th of November 1782, the articles of a provisional treaty were settled between Britain and America. By these it was stipulated, that the people of the United States should continue to enjoy, without molestation, the right to take fish of every kind on the grand bank, and on all the other banks of Newfoundland; and that they should continue to exercise the same privilege in the Gulf of St Lawrence, and at every other place in the sea where the inhabitants used heretofore to fish. They were likewise to have the liberty to take fish of every kind on such parts of the coast of Newfoundland as British seamen resort to, but not to cure or dry them on that island. They were to enjoy the privilege of fishing on the coasts, bays, and creeks of the other dominions of his Britannic majesty in America; and the American fishermen were permitted to cure and dry fish in any of the unsettled bays, harbours, and creeks of Nova Scotia, Magdalen Islands, and Labrador. But it was agreed that, after such places should be settled, this right could not be legally put in practice without the consent of the inhabitants and proprietors of the ground. It was arranged that creditors upon either side should meet with no impediment in the prosecution of their claims; that the congress should earnestly recommend it to the legislatures of the respective states, to provide for the restitution of all estates and properties which had been confiscated belonging to real British subjects, and of the estates and properties of persons resident in districts in the possession of his majesty's arms, and who had not borne arms against the United States; that persons of any other description should have free liberty to go to any part whatsoever of any of the thirteen United States, and remain in it for twelve months unmolested in their endeavours to recover such of their estates, rights, and properties, as might not have been confiscated; that the congress should earnestly recommend to the several states a revision of all acts or laws regarding the premises, so as to render them perfectly consistent, not only with justice and equity, but with that spirit of conciliation which, on the return of the blessing of peace, should universally prevail; that no future confiscations should be made, nor prosecutions commenced against any person, or body of men, on account of the part which he or they had taken in the war; that those who might be in confinement on account of such a charge at the time of the ratification of the treaty in America should be immediately set at liberty; that all hostilities by sea and land should immediately cease; that prisoners on both sides should be set at liberty; that his Britannic majesty should expeditiously, and without committing destruction of any sort, withdraw all his armies, garrisons, and fleets, from every port, place, and harbour, of the United States; that the navigation of the river Mississippi, from its source to the ocean, should remain for ever free

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and open to the subjects of Great Britain and the citizens of the United States; and, finally, that if any place or territory belonging to Great Britain or to the United States should be conquered by the arms of either before the arrival of the provisional articles in America, it should be restored without compensation or difficulty.

In the treaty between Great Britain and France it was agreed that Newfoundland should remain with England, as before the war; and, to prevent disputes about boundaries, it was arranged that the French fishery should commence at Cape St John on the eastern side, and, sweeping round by the north, should have for its boundary Cape Ray on the western side. The islands of St Pierre and Miquelon, which had been taken in September 1778, were ceded in full right to France. Great Britain was to restore to France the island of St Lucia, and to cede and guarantee to her that of Tobago; and France was to surrender to Great Britain the islands of Grenada and the Grenadines, St Vincent, Dominica, St Christophers, Nevis, and Montserrat. The river Senegal and its dependencies were to be given to France; and the island of Goree was also to be restored. Fort James and the river Gambia were guaranteed to his Britannic majesty; and the gum trade was to remain in the same condition as before the commencement of hostilities. The king of Great Britain was to restore to his most Christian majesty all the establishments which belonged to him at the breaking out of the war on the coast of Orixá and in Bengal; and became bound to secure to the subjects of France in that part of India, and on the coasts of Orixá, Coromandel, and Malabar, a safe, free, and independent trade, either as individuals, or under the direction of a company. Pondicherry, as well as Karikal, was to be restored to France; the two districts of Valanour and Bahour, round Pondicherry, and the four contiguous Magans round Karikal, were also to be given up; and the French were again to enter into the possession of Mahe, and of the comptoir at Surat. The allies of France and Great Britain were to be invited to accede to the present pacification; and in the event of their disinclination, no assistance on either side was to be given to them. Great Britain renounced all claims to Dunkirk. Commissioners were to be respectively appointed by both nations to inquire into the state of commerce, and to concert new arrangements of trade on the footing of mutual convenience. And all conquests on either side, in any part of the world whatsoever, not mentioned nor alluded to in the treaty, were to be restored without difficulty, and without requiring compensation. The prisoners on each side were also to be released without ransom, upon the ratification of the treaty, and on paying the debts which they might have contracted during their captivity; and each crown was respectively to reimburse the sums which had been advanced for the maintenance of their prisoners, by the country where they had been detained, according to attested and authentic vouchers. These preliminary articles of peace were concluded at Versailles on the 20th of January 1783, between Mr Alleyne Fitzherbert, minister plenipotentiary on the part of his Britannic majesty, and Charles Gravier, Comte de Vergennes, the minister plenipotentiary on the part of the king of France.

At the same time preliminary articles of peace between Great Britain and Spain were also concluded at Versailles between Mr Fitzherbert and the Conde d'Aranda, the minister plenipotentiary of the Spanish monarch. His Catholic majesty was to continue in possession of the island of Minorca, and to retain West Florida; whilst East Florida was to be ceded to him by the king of Great Britain. Eighteen months from the ratification of the definitive treaty were to be allowed to the subjects of Britain

who had settled in the island of Minorca and in the two Floridas, to sell their estates, recover their debts, and transport their persons and effects, without being restrained upon account of their religion, or on any other pretence whatsoever, except that of debts and prosecutions for crimes. The liberty of cutting logwood, in a district of which the boundaries were to be ascertained, without molestation or disturbance of any kind whatsoever, was granted to Great Britain. The king of Spain was to restore the islands of Providence and the Bahamas, in the condition in which they were when conquered by his arms. And all other conquests of territories and countries upon either side, not included in the present articles, were also to be mutually restored without difficulty or compensation.

But no sooner were these articles ratified and laid before parliament, than they excited the most vehement declamations against ministry. Never had the administration of Lord North himself been arraigned with more asperity of language. The ministry defended themselves with resolution, but found it impossible to avoid the censure of parliament. An address without any amendment was indeed carried in the House of Lords by a considerable majority; but it was lost in the lower house. On the 21st of February some resolutions were moved in the House of Commons by Lord George Cavendish, of which the most remarkable were, that the concessions made by Britain were greater than its adversaries had a right to expect; and that the house would take the case of the American loyalists into consideration. The last motion indeed his lordship consented to waive, but the rest were carried against ministry.

These proceedings, however, made no alteration with regard to the treaty, which had already been ratified by all the contending powers, the Dutch only excepted. The terms offered the latter were a renewal of the treaty of 1674; which, though highly advantageous, they at that time positively declined. They afterwards, however, made an offer to accept the terms which they had formerly rejected; but the compliment was then returned by a refusal on the part of Britain. When the preliminary articles had been settled with the courts of France and Spain, a suspension of arms with Holland ensued; but though the definitive arrangements with the other powers were finally concluded by the month of September, it was not till then that the preliminary articles were settled with Holland. The terms were a general restitution of all places taken on both sides during the war, excepting only the settlement of Negapatnam in the East Indies, which was to remain in the hands of Britain, unless an equivalent should be given on the part of Holland. The navigation of the eastern seas was to remain free and unmolested to all British shipping. The remaining articles concerned only the exchange of prisoners, and such other matters as are common to all treaties.

Thus an end was put to the most dangerous war in which Britain had ever engaged, and out of which, notwithstanding the powerful combination against her, she came superior to all her enemies. The politicians who had imagined that the prosperity of Britain depended in a great measure on her colonies were singularly mistaken. This was shown at the time, and has been completely confirmed by subsequent experience. For a number of years she had not only been deprived of these colonies, but opposed by them with all their force; yet though attacked at the same time by three of the greatest powers in Europe, and looked upon with an invidious eye by all the rest, the damage done to her enemies still greatly exceeded that which she had received. Their trade by sea was almost ruined; and on comparing the loss of ships on both sides, the balance in favour of Britain was twenty-eight ships of the line and thirty-seven frigates, carrying in all near two thousand

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guns. Notwithstanding this, however, the state of the nation appears to have been really such that a much longer continuance of the war would have been impracticable.

Having thus given as full an account as our limits admit of the great national events till the conclusion of the peace in 1783, we shall now advert to some others, which, though of sufficient importance to deserve notice, could not be previously introduced without interrupting the narrative. On the 8th of December 1776 a fire broke out in the rope-house of the dock-yard at Portsmouth, which totally consumed it, but without doing any very material damage. For some time the affair passed as an accident; but in clearing away the rubbish a tin-box was found with a wooden bottom, containing matches which had been lighted, and underneath was a vessel filled with spirits of wine. The fire, however, not having been properly supplied with air, had gone out of itself before it touched the spirits of wine; for if it had caught fire, all the stores in the storehouse, sufficient to fit out fifty sail of the line, would have been destroyed. In the beginning of the year 1777 a fire happened at Bristol, which consumed six or seven warehouses; and by the discovery of machines similar to those already mentioned, it was evident that the fire had not been accidental. The terror of the public was now greatly increased, and violent mutual accusations were thrown out by the ministerial and popular parties. On this point, however, they soon came to a right understanding, by the discovery of the author of all this mischief.

This was one James Aitken, otherwise called John the Painter, a native of Edinburgh. Having from his early years been accustomed to a vagrant life, to which indeed his profession naturally led him, he had gone through a variety of adventures. He had enlisted as a soldier, deserted, and, when pinched by want, made no scruple of betaking himself to the highway, or of committing thefts. Having traversed a great part of America, he had there imbibed to such a degree the prejudices against Britain, that he at last took the extraordinary resolution of singly overturning the whole power of the nation; an achievement which he was to accomplish by setting fire to the dockyards at Portsmouth and Plymouth, and afterwards to the principal trading towns of the kingdom. With this view he carefully inspected the docks and other places on which his attempts were to be made, in order to ascertain in what manner they were guarded, which he found in general as negligent as he could desire: and had there not been some deficiency in the construction of his machines, he must have done incredible mischief; for as his attempts were always detected by the discovery of his machines, it is evident that he had met with abundance of opportunities. For some time the affair at Portsmouth, as has already been mentioned, passed for an accident. It was soon recollected, however, that a person had been seen loitering about the rope-house, and had even been locked up a night in it; that he had worked as a painter, and taken frequent opportunities of getting into that house, and other buildings in the yard. These circumstances exciting a suspicion that he was the incendiary, he was traced to different places, and at last found in a prison, to which he had been committed on a charge of burglary. On his examination, however, he behaved with an assurance and apparent consciousness of innocence which almost disconcerted those who were appointed to examine him; but at last he was deceived into a confession by another painter, a native of America, who pretended to compassionate his case. Evidence was thus procured against him, but he still maintained his character to the last, rejecting and invalidating the testimony of his perfidious friend, on account of his baseness and treachery. He received his sentence with great fortitude, but at length confessed his guilt, and left

some directions for preventing the dock-yards and magazines from being exposed to similar danger in future. Thus it appeared that the whole of the alarm of treason and American incendiaries was occasioned by the political enthusiasm of a wretched vagabond, who chose to stake his life on the wild venture we have described.

Still, however, it appeared that the French court were very well acquainted with many particulars relating to the state of this kingdom, and the movements of our squadrons, which ought by all means to have been kept secret. These treacherous communications were first detected in the month of June 1780. One Ratcliffe, master of a cutter, disclosed that he had been hired by a fellow called Roger to carry packets to France, for which he was to be paid L.20 each time, and to have L.100 besides at a certain period; but apprehending that he might incur some danger by continuing this employment, he gave information of what was going on to one Mr Steward, a merchant at Sandwich, by whom his last packet was carried to the secretary of state. After being opened and sealed up again, it was returned, and he was directed to carry it to France as formerly. Several succeeding packets were treated in the same fashion, though it was some time before Ratcliffe saw the principal party concerned; but this was at last accomplished by his complaining to Roger that he had not been paid the L.100 according to promise. A meeting having been procured, it was found that the person who furnished intelligence to the enemy was one M. Henri de la Motte, a French gentleman then residing in London. On searching his house, no papers of any consequence were found; but being absent when the messengers first arrived, he, on his return, threw some out of his pockets, unperceived, as he thought, by any body. The papers, however, were taken up by the messengers, and gave plain indications not only of a treasonable correspondence with the enemy, but also of his being connected with one Henry Lutterloch, a German, who then resided at Wickham near Portsmouth. This person being also apprehended, not only made a full disclosure of the treasonable correspondence with France, but gave abundant proofs of being himself one of the most depraved of mankind, and lost to every feeling excepting the desire of accumulating wealth. His evidence, however, and other strong circumstances, were sufficient to convict M. de la Motte, who was accordingly executed, though the king remitted the more dreadful part of his sentence. During his trial, and on every other occasion, he behaved in such a manner as showed him to be an accomplished gentleman, and not only excited the compassion, but the admiration, of every one who saw him.

During the whole course of the war, only one other person was detected in any act of treason; and he appears to have been actuated merely by mercenary motives. This was a man called David Tyrie, a native of Edinburgh. Having been bred in the mercantile line, and engaged in a number of speculations with a view to gain money, in all of which he had discovered considerable abilities, he at last engaged in the more dangerous one of conveying intelligence to the French, of the ships of war fitted out in Britain, the time of their sailing, and other particulars. For this he was apprehended in the month of February 1782. The discovery was made by means of one Mrs Askew, who passed for Tyrie's wife. This person having delivered a bundle of papers in a hurry to a school-mistress, desired her not to show them to any one; the latter, however, not only inspected them herself, but showed them to another, by whom they were sent to the secretary at war. By this, and another packet discovered by William James, who had been employed to carry it to France, Tyrie was convicted of treasonable correspondence with the enemy, and executed in the month of August 1782.

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On the whole, it appears that notwithstanding the excessive virulence of parties, which even proceeded so far as to produce duels between some members of parliament, neither entertained any designs against what was believed to be the true interest of the nation. The one seems to have regarded its honour too much, and to have been inclined to sacrifice even its existence to that favourite notion; the other perhaps regarded the national honour too little; nor indeed could an advantageous idea have been formed of the spirit of the nation which should have submitted to the dismemberment of its empire without a struggle. The event, however, has shown, that the loss of the colonies, so far from being a disadvantage, has been the very reverse. The commerce of Britain, instead of being dependent on America, has arrived at a much greater height than ever; whilst the consequent increase of wealth has enabled the nation to support that enormous debt, part of which was contracted, first in defending, and then in attempting to conquer, the colonies.

CHAP. XIV.

REIGN OF GEORGE III.—INTERMEDIATE PERIOD.

Nature of the opposition to Lord Shelburne's administration.—States of Parties.—Coalition between Lord North and Mr Fox.—Coalition Ministry.—Taxes.—Mr Pitt's Motion for Reform in Parliament.—Irish Independence Bill.—Mr Dundas's India Bill.—Mr Pitt's Office-Reform Bill.—Petition of the American Loyalists.—Establishment of the Prince of Wales.—New Inventions.—Opinion of the Public respecting the Coalition.—Mr Fox's India Bills.—Report of the Secret Committee.—Sir T. Rumbold and Mr Hastings accused by Mr Dundas.—Report of the Select Committee.—Debates on Mr Fox's Bills.—First Bill carried in the Commons.—His Majesty's disapprobation intimated.—Rejected in the Lords.—Change of Ministry, and accession of Mr Pitt to Office.—Contest between the Crown and the House of Commons.—Resolutions of the House against the new Ministry.—Mr Pitt's Bill for regulating India rejected.—Further Disputes.—The Public take part with the Administration.—New Coalition proposed.—Mr Pitt refuses to resign, and the King also refuses to dismiss the Minister.—Dissolution of Parliament.—Elections.—Total Defeat of the Coalition.—Consequences.—New Parliament.—Mr Pitt's new India Bill.—Debates on this Measure.—Finance.—Restoration of the Forfeited Estates.—Westminster Election.—Nabob of Arcot's Debts.—Nature of these.—Exposition of Mr Burke.—Mr Pitt's Plan of Parliamentary Reform.—Rejected *in limine*.—Finances.—Duke of Richmond's Fortifications.—Regulation of Public Offices.—Irish Propositions.—Foreign Affairs.—League to protect the Germanic Constitution.—Commercial Treaties.—Britain and Hanover.—Debate on the Duke of Richmond's Plans.—Militia Laws.—Mr Pitt's Sinking Fund.—Discussion thereon.—Fallacy of the Scheme.—Wine Duties.—Best size and form of Ships of War.—General State of the Empire.—India.—Mr Burke's Proceedings against Mr Hastings.—Mr Pitt's India Bill amended by Mr Dundas's act.—Attempt against the King's Life by Margaret Nicholson.—Commercial Treaty with France.—Debates thereon.—Mr Pitt's Defence of the Treaty.—Consolidation of Taxes.—Corporation and Test Acts.—Prince of Wales's Debts.—Accusation of Mr Hastings.—Mr Sheridan's celebrated Speech on the Begum Charge.—Articles of Impeachment prepared.—Impeachment Voted.—Reflections on this Proceeding.—Affairs of Holland.—State of Parties in the United Provinces.—Interference of the Neighbouring States.—Prussians invade Holland.—Meeting of Parliament.—Conduct of the Government in regard to Holland approved of by the Opposition.—Naval Promotions, and Debates thereon.—Act against the Exportation of Wool.—State of the Revenue.—Compensation to the American Loyalists.—Slave Trade.—Bill for Regulating the Transportation of Negroes.—Indian Affairs.—Declaratory Bill.—Trial of Mr Hastings.—Burke's Oration of Five Days.—Mode of Procedure.—Accusation of Sir Elijah Impey.—State of European Politics.—Sweden.—Wars between Sweden and Russia.—Danish Invasion of Sweden.—Interposition of the British Envoy, and Recall of the Danish troops.—The King's Illness.—Regency Question.—Debates and Proceedings connected therewith.—Manœuvring and Procrastination of

the Ministry.—The Prince's Correspondence.—Regency Bill passed.—Recovery of the King.—Conduct of the Irish Parliament respecting the Regency.—The Slave Trade.—Mr Wilberforce's Propositions.—Jesuitical Support of Mr Pitt.—Mr Addington chosen Speaker of the House of Commons.—New Taxes.—Extension of the Excise Laws.—Proposed Repeal of Religious Tests and Penal Statutes.—Indian Affairs.—Trial of Mr Hastings.—Affair of Nundcomar.

It has been already remarked, that in the debates in the House of Commons upon the treaties concluded under Lord Shelburne's administration, by which the American war was brought to a close, the terms of those treaties were disapproved of by the majority of the house; and this disapprobation was expressed by carrying an amendment to the ministerial motion for an address of thanks to his majesty. It does not appear, however, that the nation at large disapproved of the conditions of the peace. All ranks of men had long been weary of the war with the colonies, and desirous to relinquish every claim of sovereignty over them; and this point being decided, other objects of negotiation were of too little importance to excite any great degree of public interest. The majority which now voted against administration consisted of men brought together by views little connected with the accomplishment of any patriotic object, and in a manner which well merits the attention of the historian.

The death of the Marquis of Rockingham left in a very disjointed state the party which had opposed the American war. Lord Shelburne's administration appears to have been formed under the influence of the crown alone, to the exclusion of Lord North and his friends, as well as of Mr Fox and the other principal members of the former opposition. Thus an attempt appears to have been made to govern the kingdom without supporting the royal prerogative by the strength of any political party. An event, however, occurred of a nature undoubtedly not a little dangerous to the constitution; but being new in itself, it seems not to have been foreseen by speculative writers upon the British government.

The American war had been conducted with a profusion of expense totally unexampled in former contests. The service of government became of itself an immense object of trade, an employment in which thousands of all kinds of artists, manufacturers, and merchants, engaged; and hence the patronage enjoyed by the minister for the time was proportionally extensive. The natural consequence was, that he and his friends, with a long train of their friends and dependents, were enabled to accumulate great wealth, and rise to the enjoyment of influence in all parts of the country. The impracticability of accomplishing the great object of the war at last led to its termination; and the minister who had been unsuccessful in conducting it was dismissed, as had usually been done upon such occasions in Britain, to make way for his antagonists, who had long recommended, and who could, therefore, with a better grace adopt, measures of pacification. But the dismissal of the minister and his friends from their official situations did not at once destroy their political importance in the state. They constituted a very formidable body of men in both houses of parliament; and such was the influence which the possession of power had conferred upon Lord North, that to the latest period of his life he was understood to be able to carry along with him, at all times, upwards of forty votes in the House of Commons; a power which was evidently too dangerous to belong to a subject of a free state, and so indeed it proved by the event to be.

Mr Fox, and the other statesmen who had led the opposition to Lord North's measures during the American war, but who had retired from administration on the accession of Lord Shelburne to the treasury after the death

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Geo. III. of the Marquis of Rockingham, appear to have at last become weary of an unprofitable opposition, and desirous upon almost any terms of entering into the enjoyment of power. But their party, though possessing very great talents, was too weak in point of numbers to be able to contend against the minister of the day, supported by the whole patronage of the crown. On the other hand, though Lord North and his friends formed in both houses of parliament a very formidable phalanx, still they also were too few to contend against ministerial influence, and the party usually called the "king's friends;" while from the natural course of things they might also expect that their numbers would gradually diminish. They had risen by attaching themselves to the service of the state; and the changes which mortality produces would by degrees enable the existing government to supplant them by a new race of ambitious men. In this state of matters the two opposition parties, led by Lord North and Mr Fox, thought fit to come to an agreement to unite their strength, and thus, by forming a complete majority in parliament, to impose themselves upon the sovereign as his ministers. In this way the majority was produced which opposed Lord Shelburne's administration, and it has since been known under the appellation of the Coalition.

The effect produced upon the public mind by this coalition was extremely important; and it is probable that even yet its consequences are not fully understood. In almost any other country than Britain, and indeed at many former periods of our history, such a combination of powerful men, possessing a predominance in the legislature, could not have failed to prove fatal to the constitution, and destructive of the internal tranquillity of the state. If the king gave way to such an aristocratical combination, and received its leaders into his service, it was to be feared that the whole patronage of the crown, together with the authority of the royal name, and the majority which they already possessed in the other branches of the legislature, might enable them to fortify themselves by new institutions and laws, and render them independent both of the king and people. No hope appeared from a dissolution of parliament, as the public at large were not at once aware of the critical situation to which the constitution had been brought by the Coalition; and a prince of a rash character would, in such circumstances, perhaps have seen no other resource for the protection of his prerogative, than to attempt to govern without a parliament, the majority of which were evidently acting, not the part of dutiful subjects or faithful representatives of the people, but of individuals conspiring to seize, for their own private advantage, the emoluments and authority of office. This judgment will not probably be regarded as too severe, when it is considered, that at the period in question there existed no pretext for opposition to the crown founded upon any complaint of the nation against the abuse of its prerogatives; and that the individuals who now coalesced could not have been induced to do so upon any pretence of political principle. Lord North, the steady assertor and supporter of the royal prerogative, and the conductor of the American war, now joined Mr Fox, the opponent of that war, and the eloquent champion of the privileges of the people; and neither of these men, nor their friends, ever pretended that they had relinquished their former opinions. The purpose of the present coalition was therefore notorious; whilst the outrageous abuse with which they had formerly treated each other served only to afford a new example how completely ambition is capable of subduing every resentment, and all the ordinary passions of the human mind.

The party now called the Coalition had displayed the superiority of their numbers in the House of Commons in

the debates upon the treaty of peace in the middle of February. From that period it was considered as obvious that a new administration must be formed; and hence from that time public business remained at a stand, and the nation was kept in suspense. The period was critical, on account of the termination of the war, at which great bodies of troops and seamen were to be discharged, and many pecuniary arrears paid off. The different regiments of militia were also disembodied, and sailors and soldiers dismissed in a state of turbulence, natural to men accustomed to arms, and whose pay had not been regularly paid. These and other circumstances, joined with the unsettled state of the government, produced various disorderly proceedings at Portsmouth, Plymouth, and other places. In the mean time, a loan could not be negotiated by the ministry whilst they wanted the countenance of the House of Commons. During the whole month of March, however, they still lingered in their places, and a variety of negotiations were carried on by the court for the purpose of attempting to form a new ministry, without an unconditional transfer of the government of the kingdom to the Coalition. Confident of their own strength, however, this political combination were desirous of attaining power upon their own terms, and continued to display their superiority in the House of Commons, with a view to compel their own reception at court. On the 24th of March, on the motion of Mr T. W. Coke, seconded by Lord Surrey, an address was agreed to, requesting his majesty to take into consideration the distracted state of the empire after an exhausting war, and to comply with the wishes of the house, by forming an administration entitled to the confidence of his people. His majesty answered, that it was his earnest desire to do every thing in his power to comply with the wishes of his faithful Commons. The delay, however, continued; and all descriptions of men were involved in doubt, suspense, and anxiety. On the 31st of the same month, a new address, moved by Lord Surrey, was agreed to, urging in very earnest terms the formation of what was called an efficient and responsible administration, formed upon principles of strength and stability, and suited to the actual state of his majesty's affairs both at home and abroad. And at last, on the 2d of April, his majesty, yielding to what appeared as necessity, appointed an administration consisting of the leaders of the Coalition.

The Duke of Portland was promoted to be first lord of the treasury; Lord North and Mr Fox were appointed principal secretaries of state; Lord John Cavendish was made chancellor of the exchequer; Lord Keppel was placed at the head of the admiralty; Lord Stormont was created president of the council; and the Earl of Carlisle was advanced to be keeper of the privy seal. These constituted the cabinet; and the other offices of government were filled by the supporters and friends of ministers. The right honourable Charles Townshend was appointed treasurer of the navy, Mr Burke paymaster general of the forces, and Lord Viscount Townshend master-general of the ordnance. The seals were put in commission, at the head of which was Lord Loughborough. The right honourable Richard Fitzpatrick was appointed secretary at war; James Wallace, Esq. was made attorney-general; John Lee, Esq. became solicitor-general; the Earl of Northington was appointed lord-lieutenant of Ireland; and, in Scotland, the honourable Henry Erskine was made lord-advocate, in the room of Mr Henry Dundas. But the new administration was no sooner installed, than an opposition was formed, which, in the House of Lords, was led by the Duke of Richmond and Lord Thurlow; and in the House of Commons by Mr Pitt, and Mr Jenkinson, afterwards created successively Lord Hawkesbury and Earl of Liverpool.

The Coalition administration, on entering into office,

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were under the necessity of instantly negotiating a loan of twelve millions, to supply the necessities of the state; and to provide for the interest of this loan various taxes were proposed by Lord John Cavendish, the chancellor of the exchequer. These were imposed on bills of exchange, receipts, probates of wills and legacies, bonds, and law proceedings, stage coaches, quack medicines, carriages, letters-patent, and other articles; whilst registers of births, marriages, and deaths, were also taxed. These taxes gave rise to debates which produced little interest. But the case was otherwise with regard to another subject in which Mr Pitt took the lead.

Towards the close of the American war, when want of success had begun to render it unpopular, it had been repeatedly urged, both in parliament and in various publications, that the ministerial majorities in favour of the measures pursued against the colonies would never have existed if the people of this country had been fairly represented in the House of Commons. By degrees this sentiment attracted attention; and to give countenance to parliamentary reform came to be regarded as a sure step towards the attainment of popular favour. Accordingly, Mr Pitt, then a young man, endeavoured to recommend himself to notice, by engaging eagerly in the pursuit of this object. He opened the subject in the House of Commons on the 7th of May, in an eloquent speech, in which, after declaring his admiration of the general fabric of the British constitution, and affirming that he wished not to alter but to restore its true spirit, which time and changes, accident and events, had enfeebled and diminished, he asserted that the state of parliamentary representation was partial and inadequate, and the progress of undue influence alarming and ominous; that the true spirit of liberty had decayed, and that the powers of control, in different branches of the government, were greatly debilitated; that wild speculations of reform were afloat without doors; but that the measures he was about to propose were equally moderate and necessary. He stated his plan of reform to be,—first, that measures ought to be taken to prevent bribery and expense at elections; secondly, that for the future, when the majority of voters of any borough should be convicted of notorious corruption, the borough should be disfranchised, and the minority of voters not so convicted should be entitled to vote for the county in which the borough might be situated; thirdly, that an addition ought to be made to the representation, to consist of knights of the shire, and of representatives of the metropolis. Mr Pitt was opposed with much earnestness by Lords North and Mulgrave, and also by Mr Powis. He was supported, however, by Mr Fox and Mr Beaufoy, and also by Mr Thomas Pitt, who offered, as a testimony of his sincerity, to make a voluntary sacrifice of his borough of Old Sarum. Mr Henry Dundas, who now attached himself to Mr Pitt, supported on this occasion the motion of his friend, and asserted, that to comply with the wishes of the people would be the happiest means of putting an end to their complaints. Mr Pitt's resolutions, however, were lost by a very large majority.

During the same session the new administration brought forward a bill, admitting in express terms the exclusive rights and absolute supremacy of the parliament and courts of Ireland in matters of legislation and judicature, and preventing any writs of error or appeal from the courts of that country to the courts of Great Britain. The bill passed with little opposition, and tended to gratify the people of Ireland, though, by increasing the line of separation between the countries, it evidently placed them in greater hazard of disunion.

During the present session Mr Dundas obtained leave to bring into parliament a bill for regulating the affairs of

India. The chief feature of his plan consisted in subjecting the presidencies of Madras and Bombay to a controlling jurisdiction, to be conferred on the government of Bengal, which he wished to vest in the person of a governor, entitled to act when he thought fit, in opposition to the opinion of his council. Another object of this bill was to secure to the native proprietors their estates in perpetuity, on payment of a fixed tribute, and to extend these provisions to the nabob of Arcot and the rajah of Tanjore. Mr Dundas contended that such a measure was rendered necessary in consequence of the improper conduct and tyranny of the servants of the East India Company, and especially of their principal servant Mr Hastings, whom he proposed to recall, and to send out to India Lord Cornwallis, as governor-general, in his stead. The scheme, however, proved abortive; but it led to other legislative efforts on the same subject.

Though Mr Pitt had been unsuccessful in his proposal to reform the representation of the people in parliament, he immediately brought forward a bill containing a project for an inferior species of reform, respecting the fees, gratuities, and perquisites in the different departments of the public offices. The object of this bill being economy, it passed through the House of Commons, but was rejected in the House of Lords.

Towards the close of the session, a petition from the American loyalists was, by his majesty's command, presented to the House of Commons by Lord John Cavendish. It stated that the petitioners, some of whom were persons of the first character, fortune, and consideration, having adhered to Great Britain during the contest with the colonies, had been attainted in North America as traitors, and their effects confiscated by the legislatures of the different states. Many of the petitioners were widows and orphans, who had lost husbands and fathers by their adherence to the British cause; whilst others were military and civil officers, clergy and other professional men, who had lost their means of subsistence in the same manner. They prayed the House of Commons to grant them such relief as might seem adequate to their situation; and, on the motion of the chancellor of the exchequer, an act was accordingly passed, appointing commissioners to inquire into the circumstances of such persons as were reduced to distress by the late dissensions in America.

On the 23d of June his majesty, by a message, requested the aid of parliament in making a separate establishment for the Prince of Wales. Sixty thousand pounds only were demanded for this purpose; and it was stated by Lord John Cavendish, that his majesty intended to allow the prince L.50,000 a year out of the civil list, without requiring from the public any further assistance than the above sum of L.60,000, which would be requisite to defray the extraordinary expense attending a new establishment. This last sum was the more readily granted, because rumours had gone abroad, which were alluded to by Mr Pitt in the House of Commons, that an intention had existed on the part of the administration, particularly of Mr Fox, to give the prince a very splendid establishment at the public expense, but that this proposal had not proved acceptable to his majesty. Mr Fox said, that he undoubtedly considered the proposed establishment as much too low; and that if it had remained with him to have advised an establishment, he would most assuredly have proposed a sum more adequate to the object in view. The person, however, most proper to decide in the business had been of an opinion very different, and it was his duty to submit.

Parliament was soon afterwards prorogued. The nation was now in a state of perfect tranquillity. Some anxiety,

Reign of George III. however, existed in the minds of men with regard to the public welfare. The load of public debt which had been incurred seemed excessive; and though commerce began to flow into new and extensive channels, the returns of trade necessarily required some time to exhibit themselves in the form of a flourishing revenue. In the interval, therefore, between the period at which the ministerial expenditure for the support of the war ceased, and that at which the first profits of foreign trade were received, a considerable shortcoming took place in the public revenue, and individuals experienced many difficulties. These, however, gradually passed away; and two inventions were by degrees brought to perfection, which of themselves secured a profit to the public, almost equivalent to the burdens which it had incurred in consequence of the American war. These were the machine for spinning cotton, the invention of a man, originally of low station, Richard Arkwright; and the very valuable kinds of pottery contrived by Mr Wedgwood. The first of these, by producing at a cheap rate the most beautiful cotton fabrics, in a great measure put an end to the use of silk, and gave to the British manufacturers a kind of monopoly of many of the most useful articles of clothing; whilst the other not only drew to the nation immense sums from foreign countries, but, from the bulky nature of the commodity, employed an immense tonnage of shipping in its exportation.

In the mean time people had leisure to reflect upon the nature of the coalition of political parties which had recently taken place. The tendency of that measure, and the possible evils which might result from it, did not at once present themselves to the minds of men, because it was not known to the public at large that the sovereign had felt his own independence affected by the event. The general sentiment, however, was that of indignation against the political parties, who had so far forgotten all the principles which they had long and loudly professed, as to be capable of uniting with each other for the sake of power and emolument. It was universally said that no honesty was to be found among political men, and that no profession of patriotism ought henceforth to be trusted. Thus a severe wound was inflicted upon the public morals of the nation, by the want of consistency which its most conspicuous characters had exhibited; and the wound was only the deeper from the apparent strength of administration, which included in itself the men of greatest political influence in the kingdom, who were considered as likely to retain long the power which they now possessed.

In this state of affairs parliament assembled on the 11th of November. In the speech from the throne, the necessity of providing for the security of the revenue, and of attending to the situation of the East India Company, were stated to both houses, as apologies for calling them together after so short a recess. Some days passed in discussions relative to different parts of the revenue, when Mr Secretary Fox moved for leave to bring in two bills relative to the affairs of the East India Company. By the first of these, it was proposed to take from the East India Company the whole administration of their territorial and commercial affairs, and to vest it in seven directors, named in the bill, viz. Earl Fitzwilliam, the Right Honourable Frederick Montague, Lord Viscount Levisham, the Honourable George Augustus North, Sir Gilbert Elliot, Sir Henry Fletcher, and Robert Gregory, Esq. These directors, or commissioners, were to hold their office during four years, and not to be removable by his majesty, without an address from either house of parliament; and they were to be aided by a board composed of nine assistant directors, who were to be removable by five of the principal directors, and were to have full authority over all the company's servants and affairs, civil as well as military. The

second bill, which accompanied the first in all its stages, was intended to regulate the administration of affairs in India. It forbade the exchange, acquisition, or invasion of any territory in India, by the general council, or any presidency there. It abolished all monopolies in India, and prohibited the acceptance of presents, making them recoverable by any person for his sole benefit. It secured an estate of inheritance to the native landholders, and provided against the alteration or increase of rents. It prohibited the molestation of princes subject to the Company, and restrained the Company's servants from collecting or farming their revenues, or having any pecuniary transactions with them. It prescribed a mode for adjusting the disputes between the nabob of Arcot and the rajah of Tanjore, and also between them and their British creditors. It disqualified the agents of the Company, or of any protected Indian prince, from sitting in the British House of Commons; and directed all offences against the act to be prosecuted in the courts of India or in the Court of King's Bench.

The East India Company's affairs had hitherto been governed, in terms of the charter of the Company, by a court of proprietors, and a court of directors elected by the proprietors. The rights of these courts, however, were to be absolutely taken away; and their whole powers, or the sovereignty of British India, was to be vested during four years certain in the hands of seven individuals, nominated by the present administration, through the medium of their parliamentary majority. It was undoubtedly a bold measure, openly to assault the privileges of such a body of men as the East India Company; but it was still more new and singular under the British constitution, in the form in which it had existed for more than a century, to vest a large portion of the executive power, including the command of armies, and an immense pecuniary patronage, in the hands of a few individuals, who were to hold their places for a fixed period, independently of the will of the crown. By taking possession in this manner of the patronage of Hindustan, the present administration would have found means to render themselves for a certain time avowedly independent of their sovereign, and they would not have failed to renew their own powers at the end of that period. It is to be observed, however, that the administration had in some degree been led by circumstances which previously occurred, and which did not originate with them, to adopt some decisive measures for reducing India under better management than that in which it had been placed by the East India Company; and of these it will not be improper here to take a short review.

The circumstance of a great and wealthy empire having been vanquished by a company of merchants, was a thing so new in the history of the world that it could not fail to be attended with a variety of inconveniences. The European nations have a near resemblance to each other in laws, manners, arts, and religion; and the mutual jealousy which for some centuries they had been accustomed to entertain of each other had prevented any of them from making great conquests. When any power, therefore, happened to acquire a portion of territory, this addition was never very great; and the laws of the neighbouring states being nearly alike, the conquered province scarcely experienced any misfortune from a change of masters. Hence the evils attending upon great conquests had ceased to be known among the nations of Europe; and the conquerors and the conquered being in all cases men of similar characters and talents, easily mingled with each other. The nobles of Alsace were as well received at the court of France as those belonging to the ancient dominions of the French crown; and the natives of the Netherlands regarded with

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much indifference their transition from the dominion of Spain to that of Austria and of France. But when the British made conquests in Hindustan, all the evils occurred which naturally attend the loss of national independence, and that most wretched of all states of human affairs, in which a race of strangers enjoys permanent dominion, whilst the natives of a country are subjected to hopeless depression and slavery. The British invaders of India undoubtedly possessed, or speedily acquired, the same rapacity with other conquerors; and as they were the servants of a company of merchants whose only principle of exertion was profit, it is probable that under them avarice and extortion assumed more vexatious forms, because accompanied with greater assiduity, and a more persevering temper, than were exhibited by the former conquerors of that country, who issued from the deserts of Tartary and Arabia. The people of Great Britain, accustomed at home to the mildest government, and to the most equitable administration of justice that the world ever experienced, heard with horror of the crimes, robberies, perfidies, and massacres which their countrymen had committed, and by which the national name and character had been rendered odious in the East. The British government, also, being no party to these crimes, wished to see them repressed, and very naturally supposed that the best remedy would consist in taking India under its own immediate management. Some public-spirited individuals, indeed, dreaded the accession of influence which the crown would thus necessarily acquire; but men of humanity were willing to encounter considerable hazard, for the sake of altering the unjustifiable mode of management which had prevailed in the East.

Early in 1781, two committees were appointed by the House of Commons, to inquire into the mal-administration of the East India Company's affairs both at home and abroad; and all parties in the house concurred in the appointment. The first, or select committee, conducted by some of the most distinguished members of opposition, was directed to inquire into the state of the administration of justice in the provinces of Bengal, Bahar, and Orlissa, and consider how the British possessions in the East Indies might be governed with most advantage to this country, and with the greatest happiness to the natives. The second, or secret committee, under the management of persons in the confidence of administration, was directed to inquire into the causes of the war in the Carnatic, and the condition of the British possessions in those parts.

On the 9th of April 1782, Mr Henry Dundas, lord-advocate of Scotland, and chairman of the secret committee, moved that the reports of that committee be referred to a committee of the whole house. Upon this occasion, Mr Dundas, in a long speech, enumerated the causes of the calamities of the East, particularly the departure of the Company's presidencies from the line of policy prescribed to them, namely, to avoid military operations with a view to conquest; the corrupt interference of their servants in the domestic and national quarrels of the country powers; their breaches of faith and disregard of treaties; their peculation and scandalous oppression of the natives; and the criminal relaxation on the part of the directors in the exercise of their controlling power over their servants, and their ready connivance at the grossest misconduct. Mr Dundas also brought forward a variety of other resolutions, which were adopted by the house; and criminated in strong terms Sir Thomas Rumbold, formerly governor of Madras, and Mr Hastings, then governor-general of Bengal. Among various charges, it was stated that Sir Thomas Rumbold had remitted to Europe, between the 8th of February 1778, the day of his arrival at Madras, and the beginning of August in the same year, the sum of L.41,000; and during the two subsequent years a fur-

ther sum of L.119,000, amounting in all to L.160,000; although his salary did not exceed L.13,335 per annum, and he had no other fair means of acquiring wealth. He was charged with having abolished the committees instituted to superintend the payment of the revenue due by the zemindars, or natives holding lands under the Company; with having compelled them to travel many hundred miles to negotiate separately with himself the terms on which they were to hold their estates; with having suffered his private secretary to receive a bribe of no less than L.20,000; with having concealed other peculations of the Company's servants; with having given a lease of lands to the nabob of Arcot, in direct disobedience of the Company's orders; and with having violated the most solemn treaties entered into with the nizams of the Deccan. Charges so heavy could not be passed over, and leave was accordingly given to bring in a bill of pains and penalties against Sir Thomas Rumbold, and two of his associates, Peter Perry and John Whitehill, for breaches of public trust and high crimes and misdemeanours; and at the same time an act was passed restraining those persons from leaving the kingdom, and obliging a discovery of their property, and preventing its alienation.

In other resolutions brought forward on the 15th of April, Mr Dundas stated a variety of accusations against Mr Hastings and Mr Hornsby; and a resolution was adopted, declaring it to be the duty of the directors of the East India Company to recal the governor-general, and Mr Hornsby the president, from their respective offices. Accordingly, the court of directors issued orders for this purpose; but these were appealed from to a court of proprietors, who, on the 31st of October 1782, prohibited the court of directors from complying with the resolution of the House of Commons. The result was, that Mr Hastings retained his office, and Mr Dundas, in the following session of parliament, brought forward the bill which we have already mentioned, but which was not passed into a law.

At the same time that Mr Dundas, as chairman of the secret committee, brought forward the resolutions already mentioned, the select committee presented their report; and on the 18th of April, General Smith, their chairman, proposed various resolutions, in some of which Mr Hastings was criminated along with Sir Elijah Impey, chief-justice of the supreme court of Bengal. By means of investigations carried on by this committee, the leading members of opposition, particularly Mr Fox and Mr Burke, qualified themselves for directing at a future period the attention of the legislature and of the public to the state of Indian affairs. Mr Fox made use of his knowledge to bring forward the two remarkable bills already mentioned; and to justify so strong a measure, it was alleged that, by the mismanagement of the courts of directors and proprietors, the affairs of the Company had been brought into such a state of extreme embarrassment as rendered it absolutely necessary to vest the administration in other hands.

These abuses were arranged under three heads, as they affected, first, the independent powers of India; secondly, the states in alliance with us; and, thirdly, our own territorial possessions. Under the *first* head were classed the extravagant projects and expensive wars entered into by the Company to extend their dominions; their violations of treaty; the sale of their assistance in support of the ambition, rapacity, and cruelty of others; and the betraying in turn almost every prince, without exception, with whom they had formed any connection in India. The *second* class of abuses comprehended the corrupt and ruinous interference of the Company in the internal government of the princes dependent on them; the unjust

Reign of George III. of exaction of exorbitant aids and tribute; the enormous peculations of the Company's civil servants; and the rapacity of the military. The *third* included the management of the countries under the immediate dominion of the Company, with respect to which it was affirmed, that the general system of their conduct in India was directed to a single end, the transmission of wealth from that country to this. With this view, monopolies had been established, not only of every article of trade, but even of the necessities of life; the privilege of pre-emption had been secured to the Company; and a variety of no less ruinous and arbitrary preferences followed. By this oppressive conduct the merchants and bankers of India, many of whom in extent of trade and credit were scarcely equalled by those of the first class in Europe, fell gradually into decay; whilst the native cultivators and manufacturers were obliged to accept of a bare sufficiency for their maintenance, measured out to them by the judgment of those who alone were to profit by their labour. The case of the zemindars, and of the cultivators under them, was, if possible, still more deplorable. At the time we obtained the dewanee or stewardship from the Mogul, the provinces of Bengal and Bahar had been laid waste by a famine, which carried off upwards of one third of the population. But the first thing done for their relief was to exact from the remainder the same tribute which had before been paid by the whole. Nor was this all. The Company's government in India had set up to public auction the whole landed interest of Bengal, without the least regard to the rights of private property, or even giving a preference to the ancient possessors; and the zemindars, most of them persons of ancient families and respectable fortunes, were under the necessity of bidding against every desperate adventurer and schemer, or of seeing their estates delivered up to the management of strangers. The sufferings of the natives under our dominion in India were further aggravated by their being almost wholly excluded from any share in the expenditure of the Company's government; all the principal collections of the revenue, all the honourable, all the lucrative situations in the army, all the supplies and contracts of every kind, were in the hands of the English; so that the natives, with few exceptions, were only employed as the servants or agents of Europeans, in subordinate stations in the army, and in the inferior department of collection, where it was impossible to proceed a step without their assistance. It was therefore urged, that the present government of India was not in its nature capable of reform. Nothing could be expected from the court of proprietors, because the members, as individuals, derived more profit from supporting Indian delinquents, than they could ever hope to receive from the fair dividends of the Company; and the court of directors, being a representative body, naturally partook of the imperfections of its constituents. In these views Mr Fox was powerfully supported by the splendid eloquence of Mr Burke. But Mr Pitt contended, that although India undoubtedly wanted reform, the alteration to be adopted ought to be constitutional, and not such as in its principle endangered the safety of every chartered incorporation in the kingdom. The company's charter was not the result of the mad prodigality of a Plantagenet, a Tudor, or a Stuart, but a fair purchase deliberately made from parliament, which could not be violated without a gross disregard to public faith. By vesting the whole patronage of India in commissioners nominally appointed by parliament, but actually selected by administration, the influence of the crown would be augmented to a degree which would enable it, like an irresistible torrent, utterly to overpower and sweep away the remaining liberties of the country. On the other hand,

Mr Dundas did not object to the measure under consideration because it increased the influence of the crown, but because it did what was much worse, by placing a new and unexampled influence in the hands of the minister and his party for five years, which would be independent both of the crown and the parliament. The bills were further attacked, not merely by those persons who might be supposed to aspire to supplant ministers in their offices, but also by several country gentlemen of independent character and high reputation for integrity; whilst the ordinary members of opposition impugned the motives of their author in very pointed terms.

The principal supporters of the bills were the two secretaries of state, Mr Burke, Mr Sheridan, Mr Erskine, Mr Lee, Mr Adam, Sir Grey Coupar, Mr Anstruther, Mr Courtney, Mr Rigby, Lord Maitland, and Sir Henry Fletcher; and they were opposed by Mr William Pitt, Mr Thomas Pitt, Mr Jenkinson, Mr Powis, Mr Dundas, Mr Macdonald, Sir James Lowther, Mr Duncombe, Mr Martin, the Marquis of Graham, Mr Arden, Mr William Grenville, Mr Beaufoy, Mr Wilberforce, Lord Mulgrave, and Mr Wilkes. The first bill, however, was carried by a considerable majority; and on the 9th of December it was presented to the House of Lords by Mr Fox, attended by a great number of members. On the first reading, Earl Temple, Lord Thurlow, and the Duke of Richmond, reprobated the measure in the most unqualified terms, but without calling for a vote of the house; and Lord Thurlow, at the same time, pronounced a panegyric upon the character and services of Mr Hastings.

Reign of George III. Meanwhile an alarm seems to have been excited in the mind of the sovereign. He had reluctantly given way to the strength of the coalition, and conferred upon its leaders the first offices of the state; and he now heard it alleged, with some plausibility, that this combination of ambitious men, not satisfied with the ordinary influence attending their situation, were about to fortify themselves in the possession of power in such a way as gradually to enable them to become independent both of him and his people. The moment seemed therefore to have arrived when temporizing measures could no longer be pursued, and a stand must be made for the support of the royal prerogative. Accordingly, on the 11th of December his majesty had a conference with Earl Temple, in which he confessed himself completely convinced of the correctness of the views entertained by opposition; and although it was now somewhat late to oppose a measure which had been brought forward by the ministers of the crown, and carried through the House of Commons under the apparent sanction of the royal authority, a resolution was nevertheless adopted to endeavour to prevent its further progress by means of the House of Lords. A card was accordingly circulated, understood to be sent by Earl Temple, in consequence of written authority from his majesty, in which it was stated, that his majesty allowed Earl Temple to say, that whoever voted for the India bill was not only not his friend, but would be considered by him as his enemy; and that if these words were not strong enough, Earl Temple might use whatever words he should deem stronger or more to the purpose. The consequence of this interposition was, that, on the 15th of December, upon a question of adjournment in the House of Lords, the ministers were left in a minority of eight. On the same day Mr Baker brought forward a motion in the House of Commons, to declare, that, to report any opinion of his majesty, upon proceedings depending in parliament, with a view to influence the votes of the members, is a high crime and misdemeanour, and a breach of the fundamental privileges of parliament. This motion was seconded by Lord Maitland, and supported by references to the journals, and by the principle, that

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advice ought only to be given to the king by his ministers, who are responsible for all the measures of government. Mr Pitt, however, opposed it, as proceeding upon unauthenticated rumours, and asserted that the precedents alluded to in the journals were not applicable to the present case. But the motion was nevertheless carried by a large majority; and as it was feared that a dissolution would instantly take place, the house resolved that they would consider any person as an enemy to his country who should advise his majesty to interrupt their discharging the important duty of providing a remedy for the abuses which prevailed in the East Indies, and that they would resolve themselves into a committee on the state of the nation on the 22d December. But on the 17th Mr Fox's India bill was rejected in the House of Lords; and at twelve o'clock on the night of the 18th a message was delivered to the secretaries of state, requiring them to transmit to his majesty the seals of their offices, by the under secretaries, as a personal interview would be disagreeable to the king. Early next morning, letters of dismissal, signed by Earl Temple, were sent to the other members of the cabinet, and a general resignation of offices followed.

A new administration was immediately formed, in which Mr Pitt was appointed first lord of the treasury and chancellor of the exchequer; the Marquis of Caermarthen and Mr Townshend, who had been created Lord Sidney, were made secretaries of state; Lord Thurlow became lord high chancellor; the privy-seal was transferred to the Duke of Rutland; Earl Gower became president of the council; the Duke of Richmond was made master of the ordnance, and Lord Howe first lord of the admiralty; Mr Grenville and Lord Mulgrave were appointed joint paymasters of the forces, and Mr Henry Dundas treasurer of the navy; the office of lord advocate of Scotland, which this gentleman had formerly held, being transferred from the Honourable Henry Erskine to Mr Ilay Campbell.

A spectacle was now about to be exhibited which had long been unknown in Britain,—that of an administration appointed by the crown, in direct opposition to the House of Commons. This, however, was no longer the House of Commons which had subdued the royal prerogative, and contended with success against our ablest and most ambitious monarchs. The late coalition had produced throughout the nation a general distrust of the character of those who formed the majority of its members; and it was soon found that a representative body possesses little power or influence, and may be safely disregarded, when it ceases to be the organ of the public sentiments. It was expected that an immediate dissolution of parliament would take place; but the change of the highest officers of the crown having been hastily made, it is probable that the new ministry dreaded entering instantly upon the business of an election against the powerful parties coalesced in opposition to them. The majority of the House of Commons also dreaded a dissolution, and, on Monday the 22d of December, they voted an address to the king, stating the present inconveniencies which would attend a prorogation or dissolution of parliament. His majesty returned an answer on the 24th, acquiescing, in general terms, in the sentiments contained in the address, and assuring the house that, after a short adjournment, their meeting would not be interrupted by any prorogation or dissolution.

When the house met on the 12th of January, Mr Fox attempted to introduce, previous to any other business, the discussion of certain resolutions which had been prepared by the opposition; whilst the new ministers endeavoured, by means of a stratagem, to be heard first, Mr Pitt declaring that he had a message to deliver from the king. But after some tumult, Mr Fox being allowed to proceed, called upon Mr Pitt to give the house an assu-

rance that no dissolution would take place; and the latter, having declined to comply with this requisition, Mr Fox moved that the house should resolve itself into a committee on the state of the nation, and the motion was carried by a large majority. It was then resolved, that to issue public money after a prorogation or dissolution of parliament, unless an act had previously passed, appropriating the supplies to specific services, would be a high crime and misdemeanour; that, in the present state of his majesty's dominions, it was necessary to have an administration possessing the confidence of the house and the public; that the recent appointments did not enjoy the confidence of the house; and that the second reading of the mutiny bill should be deferred till the 23d of February. Warm debates ensued upon these resolutions. The Coalition was branded as a corrupt confederacy of two desperate factions to seize upon the government of the country; and the India bill was represented as an experiment made by the late secretary of state, with a view to raise himself to a degree of power superior to that of the sovereign. On the other hand, the new administration was described as a coalition, not indeed of parties, but of the shreds and remnants, of the dregs and outcasts, of parties; as a body collected for the purpose of fighting the battles of secret and unconstitutional influence, of trampling on the power and dignity of the House of Commons, of establishing a government of cabal, intrigue, and favouritism, and of destroying the very principles of laudable ambition and honourable service in the state.

On the 14th of January Mr Pitt obtained leave to bring in a bill for the better government and management of the affairs of the East India Company. By this bill, commissioners were appointed by his majesty, authorized to superintend and control all operations of the courts of directors and proprietors of the East India Company, relative to the civil and military government or revenues of the territories and possessions of the Company. This board of control was to have access to all papers belonging to the Company; and the court of directors was on no pretence to send out orders to India, without the previous approbation of the board, which was also authorized to alter and amend the orders of the directors. His majesty was authorized to name the commanders-in-chief in India, and to remove any governor, general, or member of the councils, of any British settlement in India; and all nominations by the court of directors to these offices were declared to be subject to the approbation of his majesty; nor was the court of proprietors allowed, for the future, to revoke any proceeding of the court of directors which had been approved of by his majesty. It was objected to this bill, that it disfranchised the East India Company, or violated their charter, no less than Mr Fox's bill had done; and although a meeting of the court of proprietors had passed a vote in favour of the regulations contained in it, yet at the second reading, on the 22d of January, it was negatived by a small majority.

The discussion of this bill did not prevent the House of Commons from endeavouring to shake the determination of the court, and to intimidate the new administration. A resolution was moved and carried, declaring in pointed terms the disapprobation of the house, of the appointment and continuance in office of the present ministers, which they considered as unconstitutional. Mr Pitt was also called upon to explain upon what principle he ventured to remain in office after the House of Commons had declared him unworthy of their confidence. He answered, that though novel and extraordinary, his conduct was by no means unconstitutional; that the immediate appointment or removal of a minister did not rest with the house; that he neither could or ought to remain long in such a

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In the meanwhile, a number of independent members of the House of Commons attempted to heal the present breach by proposing a new coalition of parties, and the formation of an administration upon a still broader basis than formerly. On the 26th of January, about seventy members of the House of Commons met at the St Albans tavern, and signed an address, to be presented, by a committee of their body, to the Duke of Portland and Mr Pitt, requesting them to communicate with each other on the arduous state of public affairs, and expressing a hope that, by a liberal intercourse, every impediment to a cordial co-operation of men of character, acting on the same public principles, might be removed. In answer to this address, both parties expressed themselves desirous to comply with the wishes of so respectable a meeting; but the Duke of Portland declined any interview with Mr Pitt, for the purpose of union, while that gentleman continued prime minister in defiance of the resolutions of the House of Commons; and, on the other hand, Mr Pitt refused to resign as a preliminary to negotiation. To co-operate with the St Albans meeting, one of its members moved and carried unanimously a resolution, that the present critical state of public affairs required an efficient, extended, and united administration, entitled to the confidence of the people; and it was also resolved that the continuance of the present ministers in office was an obstacle to forming an efficient, extended, and united administration; resolutions which were ordered to be laid before his majesty. The meeting at the St Albans tavern next declared that an administration formed on the total exclusion of the members of the last or present administration would be inadequate to the exigencies of public affairs. Mr Fox expressed his wishes for a union, but insisted on the resignation of the chancellor of the exchequer in compliance with the resolutions of the House of Commons, as an indispensable preliminary. Mr Pitt, on the contrary, adhered to office, and declared that the house might address the crown for his dismissal; but till the king should think proper to remove him from his situation, he held it to be neither illegal nor unconstitutional to retain it, and would not recede from his former determination. He at the same time suggested, that there might be persons on the opposite side of the house with whom he could not act. Lord North, understanding himself to be alluded to, declared his readiness to relinquish his pretensions to an official situation, if these should be deemed any obstacle to a union; and this self-denying declaration was received with great applause. Mr Marsham, Mr Powis, and other members of the St Albans association, then called upon Mr Pitt to yield to the pressing exigencies of his country, but in vain. These gentlemen, however, still continued their efforts; and, to remove the difficulty arising from Mr Pitt's refusal to resign, or to save the honour of the house upon that point, they procured the royal interference to the extent of requesting that a negotiation should be set on foot between the Duke of

Portland and Mr Pitt. A message was accordingly sent by Mr Pitt, acquainting the duke that he was commanded to signify to him his majesty's earnest desire that his grace should have a personal conference with Mr Pitt for the purpose of forming a new administration, on a wide basis, and on fair and *equal* terms. The duke requested an explanation of the message with regard to the words *equal terms*; but Mr Pitt declined any preliminary discussion. The Duke of Portland likewise proposed that he should be permitted to understand that the message implied a virtual resignation by Mr Pitt, or that he himself should receive his majesty's commands personally relative to the conference. But both of these propositions were refused, and here terminated the efforts of the St Albans association.

On the 18th of February the chancellor of the exchequer, in his place in the House of Commons, being required to say, previous to the consideration of the question of supply for the ordnance department, whether any communication was to be expected relative to the resolutions of the house which had recently been laid before the king, replied, that his majesty, after considering all the circumstances of the country, had not thought fit to dismiss his ministers, and that his ministers had not resigned. This produced a warm debate, in which it was observed by Mr Fox, that it was the first instance since the revolution of a direct denial on the part of the crown to comply with the wishes of the House of Commons; and he threw out a hint that it might be necessary for the house to protect its own authority by refusing to vote the supplies. But to allow his majesty's ministers time to consider well their situation, he proposed to defer the report of the ordnance estimate for two days. The refusal of the supplies was treated by the friends of the new administration as a threat which the utmost madness of faction would not seriously attempt to execute, and which could never be justified by his majesty's refusal to dismiss ministers who had been condemned without a trial. On a division, however, there appeared a majority of twelve for postponing the supplies. On the 20th of February a new address to the throne for the removal of the ministers was carried by a majority of twenty-one; and on the 27th his majesty's answer was reported by the speaker, in which it was stated that no charge or complaint had been suggested against the ministers, nor was any one of them specifically objected to; and that, on the other hand, numbers of his subjects had expressed to his majesty the utmost satisfaction with the change of his councils. This answer was abundantly artful, as it tended to alienate the people from the House of Commons, and, at the same time, to perplex the Coalition, who could not accuse the prime minister of any political crime, as he was a young man, who had never enjoyed the chief direction of any important affair. A second address to the throne, however, was moved in the House of Commons on the 1st of March, and agreed to by a majority of twelve, remonstrating against the answer to the former address. His majesty replied in civil terms; but persevering in his resolution to retain his ministers, the opposition resolved to make a last effort to overcome the royal determination. Mr Fox declared that he would not propose an address to the throne, because he wished for no answer, but a humble representation, to which it was not customary to make any reply. And this representation consisted of a long remonstrance against the alleged unconstitutional appointment of an administration in opposition to the wishes of the House of Commons; and concluded by stating, that the house had done its duty in pointing out the evil, and that the blame and responsibility must henceforth lie wholly upon those who had presumed to advise his majesty to act in contradiction to the

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uniform maxims which had hitherto governed his own conduct, as well as that of every other prince of his illustrious house. This representation was carried by a majority of only one vote, which the Coalition appear to have considered as a defeat; for they finally yielded to their destiny, and suffered the mutiny bill, which had been their last security against a premature dissolution, to pass in the usual terms.

Soon after the partial cessation of this struggle, parliament was dissolved; and in the elections which ensued, the new administration were extremely successful. Upwards of a hundred and sixty members of the former House of Commons lost their seats; and of these, nearly the whole were the friends of the previous administration. Thus the defeat of a powerful combination was completely accomplished, and its leaders were rendered of little importance in the legislature of the empire; and thus terminated the strength of the celebrated Coalition, the fate and effects of which ought never to be forgotten. That unfortunate measure may be said to have ruined the political fortunes of Mr Fox, undoubtedly one of the most accomplished statesmen whom Britain ever produced. From that period he was generally regarded as unfit to be intrusted with power; his eloquence ceased to persuade, and his counsels, even when full of wisdom, were regarded with distrust, because his coalition with Lord North constantly rose up against him, and suggested suspicions of his integrity, or at least of his wisdom. This coalition also had a tendency to diminish the attachment of the nation to the House of Commons, and its confidence in that branch of the legislature which, in fact, might be nothing more than a combination of factious men aiming at personal aggrandizement, and in certain circumstances rendering it necessary for the people to arrange themselves behind the throne, in order to obtain protection against one of the worst and most oppressive of all governments, that of a corrupt aristocracy.

On the 18th of May the new parliament assembled; and in the speech from the throne his majesty assured both houses of his satisfaction in meeting them, after recurring, in so important a moment, to the sense of his people, and of his reliance on their being animated by the same sentiments of loyalty and attachment to the constitution which had been so fully manifested throughout the kingdom. He directed their attention to the affairs of the East India Company, but warned them against adopting any measures which might affect the constitution; and concluded with expressing his inclination to maintain, in their just balance, the rights and privileges of every branch in the legislature.

The affairs of the East India Company were speedily brought before parliament. On the 24th of June a bill was introduced by the chancellor of the exchequer to allow the Company to divide four per cent. on their capital for the half year concluding at midsummer 1784. The necessity of the case was urged in justification of this bill for supporting the credit of the Company; and it was alleged, that notwithstanding their present distresses, which were admitted to be great, there existed a sufficient probability that their affairs upon the whole might warrant such a dividend. The bill passed through both houses, and received the royal assent. On the 2d of July, Mr Pitt brought forward another bill, which had for its object to allow the Company a respite of duties due to the exchequer, to enable them to accept of bills beyond the amount prescribed by former statutes, and to establish the regularity of their future dividends. This act gave rise to various debates, particularly in consequence of a question put by Mr Philip Francis, how far the honour of parliament would be pledged by it to enable the East India Company to make

payment of the bills accepted by them, in case the funds of the Company should prove deficient. But it nevertheless passed into a law; and Mr Pitt, still further to support the East India Company, brought forward a bill to diminish the duty upon tea, for the sake of preventing smuggling, and in lieu thereof to substitute a commutation tax upon windows. The amount of the revenue raised from tea was between L.700,000 and L.800,000; and the object of the new act was to proportion it in such a way as to raise upon that article in future no more than L.169,000, which it was supposed would enable the Company to sell thirteen millions of pounds of tea, instead of five millions and a half.

But these, which all passed and received the royal assent, were subordinate to the bill for regulating the general management of the affairs of the Company, which, though framed upon the same model with that proposed by Mr Pitt in the last parliament, yet differed from it in several particulars. The powers of the board of control were enlarged; in cases of urgency and secrecy, it was authorized to transmit its own orders to India without these being subject to the revision of the court of directors; in the governor-general and council of Bengal was vested an absolute power over the other presidencies in transactions with the country powers, and in all applications of the revenues and forces in time of war; the receiving of presents was declared to be extortion and disobedience of orders; the Company's servants were required, on their return to England, to lodge in the exchequer a statement upon oath of their whole property; and for the effectual punishment of crimes committed in the East Indies, a new court of justice was instituted.

Mr Francis opposed in strong terms the general principle of this bill, as tending to create an incongruous power, nominal on the part of the directors, real on the part of administration; and Mr Fox affirmed that the proposed board of control violated the privileges of the India Company no less than the enactment of his bills had done, whilst it increased in a greater degree the dangerous influence of the crown. He treated with great contempt the new court of judicature, which he said might fairly be called a bed of justice, as justice would sleep upon it, and thereby embitter the calamities of India, by removing all fear of punishment. When the bill came to be discussed in the committee, Mr Pitt acted in a manner which afterwards on many occasions distinguished his mode of transacting the national business. Instead of coming forward, like the leader of a party, with a measure complete in all its parts, and prepared to receive the firm support of his adherents, he not only of himself proposed some essential alterations, but adopted those suggested by others, whether friends or antagonists. The consequence was, that, in the committee, it underwent important modifications. The power of issuing orders, in the first instance, was limited to the case of the court of directors neglecting to transmit dispatches to the board, after fourteen days' notice, upon any subject which the board might think it necessary to take up. The directors were also empowered to elect a secret committee of three members, to communicate with the board concerning such orders as the board might of its own authority transmit to India. The appointment of the commander in chief of the army was withdrawn from his majesty, and left with the Company, together with the negative upon nominations in general. Mr Pitt himself also brought forward some amendments respecting the constitution of the new tribunal. Authority was now given to any person or persons to move the Court of King's Bench for an information. The court was also authorized to issue commissions to the courts in India, for the purpose of taking depositions; and the direc-

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Early in July the chancellor of the exchequer informed the House of Commons that Sir Elijah Impey, chief judge of the supreme court of justice of Bengal, had arrived in England, in consequence of being recalled by his majesty, pursuant to an address of the house. The acute sensibility or powerful imagination of Mr Burke having induced him to interest himself greatly in the sufferings of the natives of India under the British government, he now called on the ministry to enforce the resolutions of the house respecting Sir Elijah Impey, by bringing him to trial; and he repeatedly endeavoured to introduce as the subject of deliberation the reports of the committees of the former parliament respecting Indian affairs; but he was either defeated, with little reply, by a motion for the order of the day, or overpowered and silenced by the loud and continual clamour of the house.

During the present session it was found necessary to have recourse to a loan of six millions, to settle the remaining expenses of the American war. The naval establishment was at the same time fixed on a higher scale than in former years of peace. The number of seamen and marines voted was twenty-six thousand; but the military force was not large, as it did not exceed seventeen thousand five hundred men for guards and garrisons. Several new taxes were imposed upon linen and cotton manufactures, hats, paper, candles, bricks, postage of letters, horses, hackney-coaches, persons dealing in excisable commodities, and persons engaging in the amusement of shooting game or hunting, none of which met with almost any opposition.

The session closed with a motion, brought forward by Mr Dundas, for the restoration of the estates forfeited in Scotland in the rebellion of 1745, to the descendants or other heirs of the rebels. As this measure had for its object the relief of individuals whose unequivocal attachment to his present majesty and his family could not be supposed to be tainted or affected by the crimes of their ancestors, it met with the approbation of the Commons; but in the House of Lords it was opposed by the Lord Chancellor Thurlow, on the ground both of its impolicy and its partiality; impolicy, as rendering nugatory the settled maxim of the British constitution, that treason was a crime of so deep a dye that nothing was adequate to its punishment but the total eradication of the person, the name, and the family, out of the society which he had attempted to injure; and partiality, because the estates forfeited in 1715, and which were forfeited upon the same grounds and principles as those in 1745, were passed over in silence, whilst a person who had been forfeited in 1690 was even included in the provision. The bill, however, passed the Lords, and received the royal assent.

At this time the British nation enjoyed profound peace; and the public attention being no longer excited by national efforts, or by the enterprises of any political faction, was easily directed to objects of less importance, among which may be mentioned the discoveries in aerostation, which had hitherto proved of more curiosity than utility.

Parliament assembled again on the 25th of January 1784. In the speech from the throne, the object particularly recommended to the attention of both houses was the final adjustment of the commercial intercourse between Great Britain and Ireland. The first business taken up related to the choice of two members of parliament for Westminster at the late general election. Lord Hood, Mr Fox, and Sir Cecil Wray, had offered themselves

as candidates. Lord Hood easily carried his election; but between the other candidates the contest was carried on with unexampled obstinacy. The engaging manners of Mr Fox, who had for some time represented the city of Westminster in parliament, enabled him, however, notwithstanding the general unpopularity of the Coalition, to engage with success in the contest. After the election had continued upwards of six weeks, it was concluded on the 17th May 1784, leaving a considerable majority in favour of Mr Fox. At this time, being the very day previous to the return of the writ for the election, the high bailiff, at the request of Sir Cecil Wray, granted a scrutiny into the votes which he had taken. This was protested against by Mr Fox and several of the electors; and immediately on the meeting of parliament, the conduct of the high bailiff was vehemently attacked by opposition, and no less vigorously defended by administration. On a motion of Lord Mulgrave, however, it was resolved that the high bailiff of Westminster should proceed in the scrutiny with all practicable dispatch. In the beginning of February the business was resumed in the House of Commons. The scrutiny had continued eight months, and only two parishes out of seven had been scrutinized; so that it was admitted that probably more than two years longer would be necessary to finish the scrutiny. On the 8th of February, however, Mr Welbore Ellis moved that a return of the election be immediately made by the high bailiff of Westminster; and, after a variety of debates, it was at length carried, and Lord Hood and Mr Fox were returned as members for Westminster.

On the 18th of February, the attention of the House of Commons was called to the payment of the debts of the nabob of Arcot. The statute which Mr Pitt had got passed during the preceding summer authorized in general terms the court of directors to establish, in concert with the nabob, funds for the payment of such of his debts as should appear to be justly due. The court of directors accordingly ordered the council at Madras to investigate these debts; but the board of control, with some trifling limitation, ordered the whole debts to be paid out of the revenues of the Carnatic. Mr Dundas undertook the defence of the board of control, and treated with ridicule a declaration made by Mr Francis, that rumours were abroad of a collusion between the board of control and the creditors of 1777. He justified the whole of the nabob of Arcot's debts. One set of debts incurred in 1767 consisted of money borrowed by the nabob at the rate of from thirty to thirty-six per cent. interest, to pay off a sum due by the nabob to the Company, which was at that time in the utmost distress, and the interest had afterwards been reduced to ten per cent. The second branch of the nabob's debts had arisen from sums borrowed to pay off his own cavalry, which the Company had ordered him to reduce, but which he was unable to dismiss from want of money to pay their arrears. He had borrowed this money, and the Company had engaged its credit for the loan. A third class of debts, incurred or consolidated in 1777, were acknowledged by the nabob to be valid, and were only approved of by the board of control, subject to his objections, or to objections by the Company or the rest of the creditors.

Mr Burke stated a variety of objections to the nabob's debts. It appeared that the nabob had contracted a debt with the Company's servants to the amount of L.888,000 sterling, which, in the year 1767, was settled at an interest of ten per cent. In the year 1777 a second debt of the nabob of Arcot, amounting to L.2,400,000, was settled at twelve per cent. interest; and to this was added another debt, called the cavalry debt, of L.160,000, at the same interest. The whole of these four capitals, amounting to

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L.4,440,000, produced at their several rates annuities amounting to L.623,000 a year, more than half of which stood chargeable on the public revenues of the Carnatic. These annuities, equal to the revenues of a kingdom, were possessed by a small number of individuals of no consequence, situation, or profession. Mr Burke admitted that the loan of 1767 was the fairest, as it could be convicted of nothing worse than the most enormous usury. The interest at thirty-six per cent. was first paid, then twenty-five, then twenty, and, lastly, the interest was reduced to ten per cent.; but all along the interest had been added to the principal, so that of L.888,000 Mr Burke doubted whether the nabob ever saw L.100,000 in real money. With regard to the cavalry debt, Mr Burke stated, that instead of ready money, the English money jobbers engaged to pay the nabob's cavalry in bills payable in four months, for which they were to receive immediately at least one per cent. per month, but probably two, such being the rate generally paid by the nabob, and that a territorial revenue was assigned to them for that purpose; but it was upwards of two years before the arrears of the cavalry were discharged; and these jobbers being all this time in receipt of the assigned revenue, they paid off the nabob's troops with his own money. As to the debt of 1777, Mr Burke observed, that in different accounts the principal sum rose from L.1,300,000 to L.2,400,000, and the creditors had never appeared the same in any two lists. In the year 1781 they were satisfied to have twenty-five per cent. at once struck off from the capital, yet they were now to obtain payment of the whole. It appeared, therefore, that the nabob and his creditors were not adversaries, but collusive parties; and that when the nabob gave an acknowledgment of debt to a European, he received no money, and only endeavoured to support his own influence by receiving the servants of the Company into his pay. The motion for an inquiry into the conduct of the board of control on this occasion was however negatived on a division.

When Mr Pitt came into office, he had the singular good fortune of being highly popular with the nation, while he was selected to support the royal prerogative and authority against the majority of the House of Commons, then possessed by the Coalition. Accordingly, it became one of the features of his conduct to attempt, if possible, to reconcile the services expected from him by the crown with the apparent pursuit of whatever measure happened for the time to be an object of popular favour. The attempt to procure a reform in the representation of the people in the House of Commons was one of these objects. He had formerly engaged in it while acting in opposition; and now, after he had become the first minister of the crown, he still undertook to stand forward as its advocate. Every writer of history must be sensible of the defective nature of the details which he is able to give as to the causes which produce or regulate the most important events, and which often lie hidden in a region far beyond the limits of his penetration or research. In what way, or by what means, Mr Pitt contrived to retain the confidence of his master, whilst he at the same time stood forward as the champion of a reform which every body knew to be hateful at court, it is impossible to conjecture. Certain it is, however, that after he had attained to the chief place in the present administration, he still continued to correspond with the leading advocates of parliamentary reform, whose meetings he had been accustomed to attend. In a circular letter to Mr Wyvil, president of a committee of Yorkshire gentlemen, it was stated that Mr Pitt had given authority to declare, that he would bring forward the subject of a parliamentary reform as early as possible in the session; that he would support his intended proposi-

tions to the utmost of his strength; and that he would exert his whole power and credit, as a man and as a minister, honestly and boldly, to carry such a system as should place the constitution on a footing of permanent security. And at the commencement of the session, when the subject was alluded to, Mr Pitt took the opportunity to declare, that on this business he laboured incessantly; that it was that which of all others was nearest his heart, but at so early a period of the session it was impossible to state his plan specifically; that much remained to be done, but his ideas were not matured; that a reform in parliament comprehended a great variety of considerations, relating to the essentials of the constitution; that in this path he was determined to tread, but he knew with what tenderness and circumspection it became him to proceed; and he requested the house to come to the subject uninfluenced by any of those schemes and hypotheses which had hitherto been suggested.

It was not till the 18th of April, however, that he called the attention of the house to this important subject. He declared himself aware of the difficulties he must expect to encounter in proposing a plan of reform; but he entertained more sanguine hopes of success than formerly, because there never was a moment when the minds of men were more enlightened on this interesting topic, or more prepared for its discussion. He was particularly anxious to remove the objection of innovation. Anciently great fluctuations had taken place in the franchise. The number of members had varied, and even the representation of the counties was not uniform. As one borough decayed and another flourished, the first was abolished and the second enfranchised. This arose from a maxim the application of which was intrusted to the crown, that the principal places, and not the decayed boroughs, should be called upon to exercise the right of election. He was no advocate for a revival of this discretionary power, but the maxim upon which it was founded ought now to be carried into effect. The outline of his plan was this: To transfer the right of choosing representatives from thirty-six of such boroughs as had already fallen, or were falling into decay, to the counties, and such chief towns and cities as were still unrepresented; to provide a fund for the purpose of giving to the owners and holders of such boroughs disfranchised, an appreciated compensation for their property; and to make the receiving of this compensation a voluntary act of the proprietor, and if not received when tendered, to place it out at compound interest, until it became an irresistible bait to such proprietors. He also proposed to extend the right of voting for knights of the shire, to copyholders as well as freeholders. Besides the thirty-six boroughs already mentioned, he proposed to purchase the franchise of other boroughs, and to transfer the right of returning members to unrepresented large towns, which should petition parliament for the privilege. Thus a hundred members would be given to the popular interest of the kingdom, and the right of election extended to a hundred thousand additional persons. Mr Fox disapproved of purchasing from a majority of the electors of a borough the property of the whole, and of holding out pecuniary temptations to an Englishman to relinquish his franchise, though he declared himself a friend to the general principle of a more equitable representation. Mr Wilberforce supported Mr Pitt's proposal, because, by putting an end to the representation of the decayed boroughs, dangerous aristocratical coalitions would in future be prevented. But it was warmly opposed by Mr Povey, who alleged that the people of England had not called for reform, and that the business in which Mr Pitt had unfortunately engaged himself was a volunteer crusade, or a piece of political knight-errantry. Lord North likewise

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Reign of George III. opposed all change, alleging that the people were actually contented, happy, and in full possession of their liberties. And, finally, leave to bring in the bill was refused by a large majority; which was probably the very result Mr Pitt not only anticipated, but also desired.

As the sole object for which the English monarchs anciently assembled their parliaments was to obtain money from their subjects, so the adjustment of the public expenses, and levying adequate supplies, always continue to occupy a large portion of the time of every session of parliament. The prodigal expenditure which had taken place during the war still required additional taxes. For this purpose new demands were made. Hawkers and pedlars, and attornies, were taxed; and the duties on male servants and post horses were enlarged. An impost laid upon retail shops, however, encountered persevering opposition in parliament, as well as much unpopularity in the nation. It was represented as unfair, because it fell upon a small number of industrious persons; and it was observed, that, unlike other taxes, those who imposed it were in no hazard themselves of paying any part of it. But of all the taxes proposed by the minister, none encountered such sarcastic animadversion as that upon maid-servants; and Mr Pitt, who was understood to be something of a misogynist, was accused by Mr Sheridan of holding out a bounty to celibacy. But the subject which excited most attention was that of the ordnance. As early as the year 1782, the Duke of Richmond had planned an expensive system of fortifications, for protecting the different dock-yards of the kingdom; the idea having originated in the alarm occasioned by the appearance of the combined fleet in the Channel. The works had for some time been carried on, and the sum of £50,000 annually voted, without much attention being given to the subject. But during this session it was moved that an account should be laid before the house, of the expenses already incurred on fortifications, at Plymouth, Portsmouth, Gosport, Chatham, Dover, and Sheerness, with a report of the probable expense of completing the fortifications of Portsmouth and Plymouth; and afterwards the annual grant was opposed. Mr Pitt defended the Duke of Richmond, but agreed to a proposal which had been made to take the opinion of a council of officers; and this put an end to the debate.

A bill for better regulating the office of the treasurer of the navy passed without any sort of opposition; and another for the better examining of the public accounts met with little opposition; but a third brought in by Mr Pitt, for the general reform of public offices, encountered strenuous opposition. Mr Sheridan contended that it was unnecessary, as the treasury possessed ample power to make the necessary reforms; and Mr Burke contrasted, in strong terms, the trifling economy here proposed, with the prodigality of the ministers in their proceedings respecting the revenues of the Carnatic, and the sanction given by them to the pretended debts of the nabob of Arcot. The bill, however, passed through both houses, and received the royal assent.

One of the most important subjects brought under the consideration of parliament during the session, was an attempt by Mr Pitt to establish a plan of commercial union between Great Britain and Ireland. This plan was proposed to the Irish House of Commons on the 7th of February, by Mr Ord, and consisted of ten articles, usually styled the Irish Propositions, which were passed with little debate, and an address of approbation voted to his majesty. On the 22d of the same month Mr Pitt introduced the subject to the British House of Commons. He expatiated on the false and oppressive policy which had long been pursued by government in regard to Ireland, in order to render her completely subservient to the interest and opu-

lence of this country; and concluded by proposing to allow the produce of the colonies to be imported into Britain through Ireland, and to equalize the duties on the produce and manufactures of both countries; in return for which concession it was stipulated, that the parliament of Ireland should irrevocably secure some provision for defraying the expense of protecting the commerce of the empire in time of peace. After some debates upon the subject, petitions from Liverpool, Paisley, Glasgow, Manchester, and other places, to the number of sixty, were presented against the measure; and from the 16th of March to the 12th of May the House of Commons were almost incessantly employed in hearing counsel and examining witnesses. Certain exceptions were now introduced to the general rule of admitting an equal commerce between the countries; corn, meal, flour, and beer, were excluded in favour of British agriculture; and various regulations were made to secure an effectual equality of duties upon every particular object of trade in both countries. The plan thus amended produced a variety of debates, in the course of which Lord North expressed his wish for a complete incorporative union of the two kingdoms, in preference to a partial settlement, which might prove the source of perpetual discord. The resolutions, however, were warmly opposed; and being carried by only a small majority, administration did not think proper to press the adoption of the scheme.

The American war had in some measure alienated the British nation from ideas of conquest and military splendour. Commercial pursuits were now chiefly valued, and formed the principal object of encouragement to the government, and of pursuit by the people; but to prosecute these with success, it was necessary to preserve a good understanding with the neighbouring powers; and this was effected, though with some difficulty, in consequence of certain foreign occurrences not unworthy of attention.

Joseph II. was at this time at the head of the house of Austria and of the Germanic body; and among the various projects which marked his restless career, there was one which, had it been attended with success, could scarcely have failed to affect the future condition of the Germanic body. He had entered secretly into a negotiation with the elector of Bavaria, then an infirm old man, for an exchange of the electorate of Bavaria in lieu of the provinces of the Austrian Netherlands, which were to be converted into a kingdom for the elector. Count Romanzof, the Russian minister to the diet of Frankfort, informed the Duke of Deux-ponts, nephew and heir to the elector, of the substance of this treaty; and at the same time assured him that it would be carried into execution, whether he consented to the exchange or not. In the month of January of this year the duke gave notice of the intended measure to Frederick II. king of Prussia, who regarded it as a project dangerous to his own independence, as well as to that of the other German states, and endeavoured instantly to spread an alarm through Europe. He alleged, that the proposed exchange was in the highest degree iniquitous and unfair; that though the population on both sides was nearly equal, the extent of territory on the side of Bavaria more than doubled that of the Low Countries, while their respective revenues were equally disproportioned; that in Bavaria, agriculture, commerce, and finance, were notoriously neglected, whereas in the Austrian Netherlands these resources had been extended to their utmost pitch; that, whilst the territory which the emperor hoped to acquire was capable of considerable improvement, that which he gave away might be expected to retrograde rather than to advance; that these circumstances, however, were of little importance, compared with the political consequences which must result from such a measure; that the Nether-

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lands being situated at a distance from the other Austrian dominions, had always proved a source of weakness, rather than of strength, to that power; that, although a considerable revenue was derived from these provinces, it was often dearly bought, in consequence of the wars occasioned by the vicinity of France; that great political efforts had recently been made by the court of Vienna to avoid all future grounds of quarrel with the French monarchy, and this had been accomplished by the marriage of an Austrian princess to the king of France; that the possession of Bavaria, from its vicinity to the rest of the Austrian dominions, would secure to the emperor a chain of territory from the banks of the Rhine along a great part of the course of the Danube, and give him such a preponderance as would overturn all power in Germany capable of resisting the head of the empire; and that this mighty country might, at no remote period, be consolidated into one mass, and Austria would then probably rank in every sense as the first power in Europe.

Thus reasoned Frederick the Great. Succeeding events seem to warrant a belief that such an acquisition of strength by the house of Austria might have proved of considerable utility to Europe; but at the time when the scheme was proposed it excited general apprehensions. The treaty for the exchange had been concluded under the auspices of Russia and France, and to them accordingly the king of Prussia addressed his remonstrances. But the emperor of Germany and the elector of Bavaria soon found their project so strongly disapproved of by other powers, that they absolutely disavowed it; whilst the court of France contented itself with replying to the remonstrance of the king of Prussia, that the exchange had been proposed, as depending upon the voluntary arrangement of the parties, but that, as the Duke of Deuxponts had refused his consent, the proposition of course became fruitless.

Frederick, in the mean time, exerted himself with great assiduity in negotiating a league with the electors of Hanover and Saxony, for the preservation of the Germanic constitution, and for preventing such cessions and exchanges of territory as might afterwards prove injurious to the balance of power in the empire. A treaty to this purpose was therefore concluded on the 23d of July, and several German princes acceded to it, among whom were the elector of Mentz, the landgrave of Hesse Cassel, the dukes of Brunswick, Namur, and Saxe-Gotha, and the prince of Anhalt. The elector of Hanover also entered readily into the transaction, and from that period an intimate connection commenced between the courts of London and Berlin. Some British politicians, however, supposed that the opposition made to the imperial project was unwise, as tending to excite a spirit of hostility against us on the part of Austria, which, of all the powers of the Continent, was considered as our most natural ally; and it was probably owing to the part taken by Britain in this transaction that the emperor published an edict prohibiting the importation of British manufactures into any part of the Austrian dominions. In the course of the summer also the French issued an edict restricting the sale of various articles of British manufacture, particularly saddlery, hosiery, woollen cloths, and hardware, unless upon payment of duties the amount of which was equivalent to a prohibition. To counteract these proceedings commercial treaties were negotiated with the courts of Petersburg and Versailles; that with the latter having been undertaken in pursuance of a provision in the definitive treaty of peace.

Parliament met on the 24th of January 1786. In the speech from the throne some notice was taken of the continental dispute above mentioned, which was said to have terminated in such a way as to threaten no interruption to the tranquillity of Europe. This excited some discus-

sion; but Mr Pitt declined entering into any defence of the Germanic league, as he and his colleagues in office had not interfered in the formation of it; observing that accident alone had placed the sovereignty of Hanover and of this country in the same hands, and desiring to have it understood that Great Britain was by no means bound by any leagues entered into by the elector of Hanover. Mr Fox, however, denied that the affairs of Hanover could be really separated from those of Britain. Supposing that it should hereafter appear necessary for Great Britain to join the court of Vienna against the league of the Germanic princes, and that the elector of Hanover should appear as one of those princes at the head of his own troops, he put the question, Whether a British army could be directed to act in a hostile manner against troops led by their sovereign in his character of elector of Hanover? When George I. purchased Bremen and Verden from Denmark, the minister of that day, General Stanhope, used precisely the same language, and told the House of Commons that they had nothing to do with his majesty's conduct respecting his electoral dominions. But the consequence was, that the resentment of the Swedish monarch Charles XII. on account of this transaction, threatened Great Britain with a most dangerous invasion; and the very next year General Stanhope was under the necessity of demanding additional supplies, to enable his majesty to defray the expenses to which he was exposed in consequence of his purchase.

The attention of parliament was again directed to the Duke of Richmond's plan of fortification. In consequence of the former debate on the subject, the project had been remitted to the consideration of a board of officers, of which the Duke of Richmond was appointed president; and which consisted, besides the president, of Lieutenant-generals Earl Percy, Earl Cornwallis, Sir Guy Carleton, Sir William Howe, Sir David Lindsay, Sir Charles Grey, Lord George Lennox, and John Burgoyne, and six major-generals, together with Vice-admirals Barrington and Milbank, Rear-admirals Graves and Lord Hood, and Captains Hotham, Macbride, Bowyer, Luttrell, Sir John Jervis, and Sir Andrew Snape Hammond. On the 10th of February Mr Pitt stated to the House of Commons that the board had reported to his majesty their approbation of the plan, as perfectly adequate to the defence intended, and as being at the same time the least expensive in the construction, and requiring a smaller force to defend the works, than any other that could be proposed. He also presented an estimate, which had been prepared by the board of engineers, of the expense necessary to construct the fortifications. The decision of the House of Commons, however, was delayed till the end of February, when the subject was again brought forward by Mr Pitt, who proposed a resolution, bearing, that to provide effectually for securing the dock-yards of Portsmouth and Plymouth by a permanent system of fortification, was an essential object for the safety of the state, intimately connected with the general defence of the kingdom, and necessary to enable the fleet to act with vigour and effect whenever its services were required. This led to a long and not very interesting debate, the result of which was, that upon a vote the house divided equally, when the speaker gave his casting vote in opposition to the measure. On the 17th of May, however, the question was revived by Mr Pitt, who proposed that the fortifications should still be carried on at Portsmouth and Plymouth, though upon a more limited scale; but the motion was opposed with much severity of language, and at length withdrawn.

The attention of parliament was for some time occupied with a proposal for reducing the laws relative to the militia into a general act, and providing for their being an-

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ually called out and disciplined. Mr Pitt opposed the calling out of the militia annually; but afterwards, finding that a different opinion prevailed, he consented, on condition that, though the whole number of men were balloted for and enrolled, only two thirds should be actually employed. The measure, however, did not pass without opposition.

But the subject which occupied most attention during the session was the proposal of a sinking fund to be applied towards discharging the public debt. Mr Pitt had occasionally mentioned it, during the preceding session, as a great and important national measure which he intended to bring forward; and early in the present session he moved that certain papers should be laid upon the table of the House of Commons, to enable them to form an estimate of the annual amount of the national revenue and expenditure, from which a judgment might be formed of the existing disposable surplus, and of the sum it would be further necessary to provide to raise the total to the amount requisite to form the basis of the intended sinking fund. On the 7th of March he proposed the appointment by ballot of a select committee of nine persons to examine these papers, and to report the result to the house. He stated it as his intention to take every possible step to give complete satisfaction to the nation in a matter of such general concern; and he conceived that the solemnity of a committee, and the formality of a report, would answer the purpose better than a set of unconnected papers or the affirmation of a minister. The committee as balloted consisted of the Marquis of Graham, Mr William Grenville, Mr Edward Elliot, Mr Rose, Mr Wilberforce, Mr Beaufoy, Mr John Call, Mr Smith, and Mr Addington. When this committee had made its report, Mr Pitt, on the 29th March, proposed his plan to the Commons in a committee of the whole house. He congratulated parliament upon the prospects of the nation in a style of animated eloquence. He stated the revenue for the current year, as reported by the committee, to amount to L.15,397,000. The interest of the national debt was L.9,275,769, and the civil list L.900,000, which, together with the whole other expenditure for the army and navy, and other establishments, amounted to L.14,478,000; consequently there remained a surplus of the annual income, above the expenditure, of L.900,000. One million he stated to be the sum annually to be contributed to the sinking fund; and to make up the sum of L.100,000 wanted to complete this amount, he proposed small additional taxes upon spirits, timber, and hair powder and perfumery. The sum of L.1,000,000 thus provided he proposed to place in the hands of commissioners appointed for that purpose, in quarterly payments of L.250,000 each, to begin on the 5th of the following July. It was his wish that the commissioners should consist of persons of rank and distinction, the speaker of the House of Commons, the chancellor of the exchequer, the master of the rolls, the governor and deputy-governor of the bank of England, and the accountant-general of the high court of chancery. He alleged, that by laying out the sinking fund regularly at compound interest, the million to be applied would rise to a great amount in a period that was not very long in the life of an individual, and but an hour in the existence of a nation. It would diminish the debt of this country so much as to prevent the exigencies of war from ever raising it to the enormous height which they had hitherto done. In the period of twenty-eight years, the sum of a million, annually appropriated, would produce an income of four millions annually. By placing the sum in the hands of commissioners, to be applied by them quarterly to the purchase of stock, no sum would ever lie within the grasp of a minister great enough to tempt him to infringe upon this national revenue. It

could not be done by stealth, and a minister would not have the confidence to come to the house expressly to demand the repeal of so necessary a law.

Mr Fox approved in general of the institution of a sinking fund, but thought twenty-eight years too long a period to look forward to for the effect of the project. Before that term had arrived, it was not improbable that we might have another war; and a variety of circumstances might occur, which would operate as a temptation to a future chancellor of the exchequer, and a future House of Commons, to repeal the act, annul the institution, and divert the appropriation of its stock to the immediate services of the year. He stated two specific objections to the plan. The first was, that the sum appropriated ought not to have been made unalienable in time of war; and the second, that, by the institution, parliament being bound to nobody but itself, the whole plan was liable to be annihilated by a future parliament. Mr Fox repeated his objections at a future stage, and at last, in consequence of the acquiescence of Mr Pitt, introduced an amendment, that whenever a new loan should hereafter be made, the minister should not only propose taxes sufficient to pay the interest of the loan, but also to make good whatever it should be found expedient to take from the sinking fund to supply the necessities of the nation; meaning, that if, when a new loan of six millions was proposed, there should be one million in the hands of the commissioners, then the commissioners should take a million of the loan, and the *bonus* of that million should be received by them for the public, who would thus have only five millions to borrow. In the House of Lords, the other objection stated by Mr Fox was urged with some variation by Earl Stanhope, who expatiated on the danger which might occur, in future wars, of diverting the fund from its proper destination. But the bill nevertheless passed into a law without any alteration.

The establishment of a sinking fund appears to have been one of Mr Pitt's favourite schemes of finance; and, in fact, it was that which produced him the greatest degree of popularity; while, from his remaining in power during the long and expensive war which succeeded its establishment, it continued to be regularly and fully carried into effect. When a new loan was made, the minister not only proposed taxes sufficient to pay the annual interest of the new debt, but also to afford a surplus or sinking fund of one per cent. per annum, to be applied by the commissioners towards the extinction of the debt. It is almost superfluous to observe, that this scheme, from which such mighty results were anticipated, both by the political friends and opponents of the ministry, and which was loudly vaunted of as a monument raised to perpetuate his fame, is now known to every tyro in political science to have been bottomed on principles wholly fallacious; and the consequence has been, that some of its firmest supporters, having abjured the opinions which they originally entertained respecting it, afterwards united with those who had all along entertained sounder views, in putting an end to this expensive and cumbrous delusion, which had for a time imposed on the arithmetic as well as on the sense of the nation. The only effect of such a fund, when well contrived and steadily adhered to, seems to be, that it enables a nation to maintain its credit in difficult circumstances, and thus to carry on the accumulation of public debt to the highest possible amount, as well as to make trial in the completest manner of all the moral and political consequences of the funding system. We may add, that the project was not of Mr Pitt's contrivance; it formed only one, and that too not the most plausible, of three plans presented to him by Dr Price.

When the estimates for the navy were voted this year,

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At this time the British nation, recovered from the effects of the war, was enjoying considerable prosperity. The administration of justice, proceeding in the ordinary course sanctioned by the constitution, produced its usual and natural effects of tranquillity and general satisfaction. The sovereign, in consequence of his domestic virtues and regular life, was personally popular. The members of administration had obtained their offices under circumstances which originally secured the good will of the nation; and no public events had occurred to expose their characters to any severe trial, or to produce an alteration in the public opinion regarding them. Still, however, the most distinguished members of the late coalition, continuing to hold seats in parliament, naturally wished to attract the public notice, and to rescue themselves from the neglect into which they had of late fallen. For this purpose they appear to have looked towards our Indian empire for materials upon which to exert their talents and to demonstrate their public spirit; and accordingly, during the present session, an attempt was commenced by Mr Burke to bring to trial and punishment Warren Hastings, late governor-general of Bengal, for crimes alleged to have been committed in that country.

There is something in the nature of the British constitution, or rather, perhaps, in that of every free state, which renders conquest, or even the acquisition of foreign territories, in any form, not a little inconvenient. In the case of the British American territories, a constitution less or more resembling that of Great Britain had been established in every colony or province; and these separate constitutions had produced abundance of internal prosperity to the colonies; but the whole formed a disjointed empire, slightly bound together by a limited executive power, and destitute of a common legislature; and an attempt, made by the legislature of the parent state, to make laws for the whole of the subordinate communities, gave rise to a war which ended in the dismemberment of

the empire. The remaining foreign possessions, such as Ireland and the West India islands, might be supposed to remain in union with the metropolitan country chiefly in consequence of their weakness, which rendered its protection necessary to their safety, or made them incapable of erecting themselves into separate governments in opposition to its will. But the territories which had been acquired by the British in India were, in this respect, in a very peculiar situation. It might perhaps have been possible, by an incorporating union, and an extension of the privilege of representation, to combine into one firm and consolidated government the whole British islands, together with the American colonies; but with regard to the territory of Hindustan, any thing of this kind was altogether impracticable. That great and fertile country, inhabited by men of a feebleness of race, and of different language, character, and religion, is incapable of being united to the British nation upon principles of equal political freedom. It had been originally acquired, not by a conquest made under the direct authority of the executive government of Britain, but by a company of merchants, who, by uniting the military superiority of Europeans with the arts of commercial men, contrived gradually to subjugate one of the fairest portions of the globe, containing a population many times greater than that of their native country. The progress of such a power towards empire was necessarily attended with the most cruel hardships to the natives of the subjugated country. When the mercantile invaders possessed abundance of European troops, they employed them in making direct conquests of additional territory; when these troops were exhausted by war or by the climate, or, having enriched themselves, had returned to Europe loaded with the spoils of the East, and left their former employers in that quarter in a state of considerable weakness, the servants of the Company then exerted their ingenuity to foment divisions among the native princes; and when they could no longer act as principals, they appeared as seconds in every quarrel, and obtained new territories as the reward of their insidious aid. With such views they formed and broke alliances without scruple; and, on receiving supplies of troops from Europe, they were never at a loss for pretences upon which to extend their dominion. All this was the natural result of the situation of the British East India Company with regard to the natives of Hindustan. But as the jealousy of the neighbouring states of Europe, together with their equal progress in the art of war, had long put an end to the extension of conquests, and produced much political moderation in the transactions of nations, many of the people of Great Britain learned with astonishment that their countrymen had conducted themselves in Hindustan in a manner which in Europe would have been regarded with abhorrence. Efforts, however, had been made to ameliorate as much as possible the government of India, by subjecting it, in a considerable degree, to the direct authority of the executive government of this country, instead of suffering it to remain totally vested in a company of merchants; and here it appears to have been wished that the affair should be suffered to rest, and that whatever was past should be overlooked and forgotten.

This, however, did not suit the present views of opposition. Mr Burke, in particular, had been led by an ardent imagination to interest himself deeply in the calamities suffered by the natives of India; and the policy of his party at this time coincided entirely with his feelings. Accordingly he endeavoured with much eagerness to bring to trial and punishment the most distinguished person who had recently figured upon the great theatre of Indian affairs. But great obstacles stood in the way of Mr Burke's proposed attempt to procure a parliamentary

Reign of George III. conviction of Mr Hastings. He had to overcome a long series of unpopularity, the personal indifference which had been shown to him by the House of Commons, and their indisposition so much as to give him a hearing, together with the coldness of the nation at large regarding complaints of East India delinquency. All these, however, he surmounted by efforts of the most obstinate perseverance, and of consummate eloquence, upon the fertile subject of cruelty, oppression, and treachery, committed under the authority of the British government in the East; the public attention was gradually attracted to the subject; and at last it formed the chief subject of conversation and of political discussion in all parts of the island.

Mr Hastings had arrived in England on the 16th of June 1785, and on the 20th of that month Mr Burke had given notice of his intention to move for an inquiry into the conduct of the ex-governor-general. On the day of the meeting of parliament, in January this year, Major Scott, the particular friend of Mr Hastings, publicly reminded Mr Burke of the menace he had thrown out, and requested Mr Burke speedily to decide upon the course he was to pursue. Accordingly, about the middle of February, this gentleman having resolved to proceed against Mr Hastings, by moving the House of Commons to impeach him at the bar of the House of Lords, endeavoured to prepare for substantiating the charges which were to be brought, by proposing that the house should order production of various papers; and motions to this effect were renewed by him at different periods. These motions gave rise to a variety of debates, in which Mr Dundas, who, as president of the board of control, now acted as minister for India affairs, together with Sir Lloyd Kenyon, master of the rolls, chiefly opposed Mr Burke, and threw considerable difficulties in his way. Mr Pitt appeared also to be favourable to Mr Hastings; but, upon the whole, he preferred assuming the character of a candid and impartial judge upon the occasion, affording neither protection to the accused nor favour to the accuser. At last, in the month of April, Mr Burke presented to the house his charges against Mr Hastings, twenty-one in number; and to these an additional article was afterwards added. The charges were of various degrees of importance; and some of them had sufficient weight to excite a considerable degree of public interest. Mr Hastings was accused of driving a whole people, the Rohillas, from their territory, without any show of cause for so doing; of arbitrarily confiscating the property of the native princes, and imprisoning them and their servants for the purposes of extortion; of entering into war with the Mahrattas without necessity, and treacherously delivering the Mogul into their hands on the conclusion of peace; together with a variety of other offences of minor importance. On the 26th of April Mr Hastings presented a petition, requesting to be furnished with a copy of the articles of impeachment, and to be heard in his defence against them before any witnesses should be examined. This request was at once granted; and Mr Hastings having appeared at the bar, stated the great efforts which he had made for the aggrandisement of the British power in the East, and entered into a defence of his conduct on the particular points upon which he had been accused. He asserted that the Rohillas were a tribe of adventurers, in driving whom from a usurped territory he had only assisted in performing an act of necessary justice; that the princes or princesses whose property he was accused of having seized for the use of the conquerors, had deserved their misfortunes by their treachery and rebellion; that the war with the Mahrattas had not been commenced by him; that the terms of the pacification were almost universally considered as advantageous; and that the Mogul having thrown himself into their hands, was entitled

to no protection from the British government. Upon the other points he in like manner asserted, not only the innocence, but the meritorious nature of his conduct, resting his defence chiefly upon such arguments as conquering princes usually employ to justify encroachments upon their weaker neighbours.

On the 1st of June Mr Burke brought forward in the House of Commons his first charge, which related to the expulsion of the Rohillas from their country, to the number of sixty thousand men, women, and children. On this occasion Mr Burke, exerting all his eloquence, represented the prosecution as not merely a question respecting the character of an individual, or brought forward for the purpose of inflicting a hardship upon him, but as a measure necessary for the establishment of the principle of responsibility with regard to the future governors of our distant possessions, and therefore as a national and imperial question, decisive of the good or ill government of millions yet unborn. He described, in interesting terms, the character of the Rohillas, the simplicity of their manners, the prosperity of their country, and their zeal for agriculture and commerce; and he denied that there existed any plausible ground to justify the assistance which Mr Hastings had given to one of their rapacious neighbours to expel them from their territory. After a debate, however, the house decided that this charge did not contain sufficient matter of impeachment against Mr Hastings. The next article of crimination against Mr Hastings was founded upon his alleged oppressive conduct towards Cheit Sing, the rajah of Benares. From this prince he had first arbitrarily demanded payment of a sum of money, in addition to the ordinary tribute, and, on the rajah delaying payment, imposed upon him a fine of half a million sterling; then he insulted him by an ignominious arrest, and thereafter expelled him from his dominions. This charge was opened with great ability by Mr Fox, and opposed by Major Scott and Mr Grenville, who inveighed against the rajah for his alleged unwillingness to support the British power in a dangerous crisis, and for the favour he had shown the schemes of its enemies. By this time the repeated discussion of the subject had begun to interest the public; and pamphlets were published, in which Mr Hastings' character was violently attacked, and as cagerly defended. His conduct as a governor-general of India, however, appeared to the majority of the people so totally inconsistent with those ideas of equity which regulate the opinions of men in this country, that a violent degree of popular indignation was excited against him. Hitherto, however, he had been supported in the House of Commons by those who usually adhered to administration; though Mr Pitt himself had on all occasions declared his wish to act candidly as a judge, and to avoid treating the matter as a question to be supported by a particular party. But upon this article of charge concerning the rajah of Benares he entered into the views of Mr Fox; and having declared himself satisfied that Mr Hastings had in this case acted unjustifiably, it was determined by a majority that the accusation contained matter of impeachment against the late governor-general of Bengal.

During this session some further provisions were enacted for the better regulation of the government of India. On the 7th of March a motion was made by Mr Francis, and seconded by Mr Windham, for leave to bring in a bill to explain and amend the act, formerly brought in and carried through by Mr Pitt, for regulating Indian affairs. Mr Francis censured strongly three different parts of Mr Pitt's act; first, that which establishes a double government of India at home, by the court of directors and the board of control; secondly, the excessive power, by means of a constant casting voice in the council, which was bestowed

Reign of George III. upon the governor-general of Bengal; and, thirdly, the institution of a special court of justice for the trial of Indian delinquents, which deprived such persons of the privilege of trial by jury. On the authority of Lord Macartney, Mr Dundas defended the powers conferred upon the governor-general of Bengal; and declared the necessity of a new court of judicature, from the voluminous nature of the evidence in the cases of Sir Thomas Rumbold and Mr Hastings, which could not be gone through by the ordinary form of jury trial. At the same time he stated it as his intention to bring forward a bill for amending, in certain respects, the regulating act of 1784. Mr Francis's motion was accordingly rejected; and on the 16th of March Mr Dundas brought forward his new bill for the regulation of India, which conferred still further powers upon the governor-general, authorizing him to act in opposition to the sense of his council when he thought fit to take the responsibility upon himself; united the offices of commander-in-chief and governor-general; authorized the board of control to inquire into the fortunes of persons serving in India; and divided the service there into different branches, declaring that the servants of the Company should rise by gradation only in those branches of service for which they had been prepared by their former habits. After a variety of debates in both houses, the bill was passed.

The session of parliament terminated on the 11th of July, and during the remainder of the year the British empire enjoyed profound tranquillity. An incident, however, occurred, which called forth demonstrations of attachment to the person of the king from all orders of men in the kingdom. On alighting from his carriage on the 2d of August, a woman approached his majesty, under the pretence of offering a petition, and at the same time aimed a thrust at him with a knife, which, however, did no harm. Being instantly seized, and examined by some members of the privy council, with the assistance of several medical gentlemen, this woman, whose name was Margaret Nicholson, proved to be insane, and was ordered to be confined for life in Bethlehem Hospital. A public thanksgiving was ordered for his majesty's safety, and addresses of congratulation poured in from all parts of the country.

One of the most important measures of Mr Pitt's administration was carried into effect in the autumn of this year. It consisted of a commercial treaty, which, as we have already stated, Mr Eden was sent to negotiate with France, and which was concluded on the 26th of September. This treaty stipulated, in general terms, that there should be a perfect liberty of navigation and commerce between the subjects of the two sovereigns in all their European dominions, with the view of giving fair encouragement to the produce and manufactures of both countries; and a particular tariff was adjusted with regard to a great number of commodities, while all articles which it did not include were to be reciprocally imported on the terms allowed to the most favoured nations. Each of the monarchs reserved the right of countervailing, by additional taxes on certain commodities, the internal duties imposed on the manufactures, or the import charges paid on the raw material; and it was also declared, that if either of the sovereigns should be at war, every thing should be deemed free which might be found in the ships of the respective nations, with the exception of goods usually deemed contraband, even though the whole or a part of the lading should belong to the enemies of the other state.

This treaty appears to have been acceptable to a considerable majority of the nation. When parliament assembled on the 23d of January 1787, it was announced in the speech from the throne, and formed the first subject of deliberation. When the usual address to the throne was moved, Mr Fox remarked that the treaty in question

ought to be examined with much jealousy, on account of its introducing an innovation into the established system of our policy; that all the wars of Great Britain had been wars of necessity; and that the jealousy of the power of France has been founded upon the fullest experience of her ambitious character. If this was a mere commercial treaty, the framers of it had only to prove that the new channel of trade which it opened would not obstruct, or would be more beneficial than, the other ancient channels which this kingdom had long been in possession of, and which had been found to be the sources of her commercial wealth and prosperity. But if, on the other hand, the treaty was intended as a political measure, and if ministers had in view such a close and intimate connection with France as would in future render it difficult for the two countries to go to war, strong and satisfactory reasons would be required for having pursued and concluded a measure so new in the history of this kingdom, and of such vast magnitude and importance. Mr Pitt reprobated the principles stated by Mr Fox, in as far as they went to sanction the policy of a constant animosity with France. Such a doctrine militated in the most direct manner possible both against humanity and common sense; for if war is the greatest of all evils, and commerce the chief blessing which a country can enjoy, it must be the duty of those to whom public affairs are intrusted, to endeavour as much as possible to render the one permanent, and to remove the prospect and danger of the other. This was the object of the present treaty; and the advantages likely to arise from it would operate upon succeeding administrations in both countries, so as to induce them to avoid a war as long as it could be done with honour and prudence, and would also strengthen the resources of this nation for carrying on hostilities whenever these should become indispensably necessary. This was the true method of making peace a blessing. The quarrels between France and Britain had not only continued to harass those great nations themselves, but had frequently embroiled the rest of Europe, and had disturbed the tranquillity of the most remote parts of the world. In time past they had acted as if they were intended by nature for the destruction of each other; but he hoped the period had now arrived when they would justify the order of the universe, and show that they were better calculated for the purposes of friendly intercourse and mutual benevolence.

On the 12th of February the house resolved itself into a committee for the purpose of considering the commercial treaty with France, when Mr Pitt entered into a full explanation and defence of the measure. He considered it in three points of view; as affecting our manufactures, our revenues, and our political situation. With respect to the first, he showed, that though the treaty had been formed upon principles of strict reciprocity, yet that this country must, from the very nature of the case, unavoidably have the advantage. With regard to the effect of the treaty upon the revenue, he remarked, that although a considerable reduction must undoubtedly take place of the duties upon French wines, and even upon Portuguese wines, should the provisions of the Methuen treaty be still kept in force, yet this would be balanced by the increased consumption, and by putting an end to the fraudulent manufacture of home-made wine, which was brought to market as foreign wine, a practice which no regulations of excise had hitherto been able to suppress. And with reference to the political tendency of the treaty, he recurred to his former observations on that subject, which it is unnecessary to repeat.

On the part of the manufacturers, it had been objected to this treaty, that the proposed intimate connection with France would afford opportunities of enticing away our

workmen, and conveying the tools and raw materials of our manufactures out of the kingdom. But to this it was answered, that the law in regard to these matters would remain as formerly, and afford to our manufactures the same protection as at present, by restraining the interference of foreigners in regard to the matters alluded to. It was also objected in general, that the commodities in which France traded, being the produce of her soil, which could not suffer in their quantity or quality by lapse of time, whereas our commodities being principally manufactures, which owe all their value to skilful and ingenious labour, the French might by degrees become as industrious and skilful as ourselves, and thereby enter into a successful competition with us in every branch of our present trade, whilst our soil and climate rendered it impossible for us to equal them in the articles of their produce. To this it was answered, that the different nature of the objects of British and French commerce was favourable to Britain, on account of the superior population employed in bringing our manufactures to market; and, at all events, that the threatened change could not occur in twelve years, which was the whole duration of the treaty. The members of opposition objected to the treaty chiefly upon political considerations. Mr Fox contended that the only situation in which Great Britain could stand, in the general system of Europe, with honour, dignity, or safety, was as a counterpoise to the power of France. Mr Francis reproached Mr Pitt with a desertion of the principles of his father Lord Chatham, the most prominent feature of whose political character was *Antigallicanism*. Mr Flood, Mr Sheridan, and others, expressed the same sentiments; whilst Mr Powis and Mr Alderman Watson opposed the treaty, as bringing the British commerce unnecessarily into hazard at a time when it was extremely prosperous. On the other hand, the treaty was defended by Mr Grenville, Mr Wilberforce, and Mr Dundas, and the resolution proposed by Mr Pitt was carried, on a division, by a large majority. In the House of Lords the treaty was warmly opposed by Dr Watson, bishop of Llandaff, and by Lords Loughborough, Stormont, and Porchester; but this opposition proved as unavailing as that in the lower house.

During the present session a plan for consolidating into one act of parliament the whole of the duties imposed by the statutes of customs and excise, was brought forward by Mr Pitt, and received the universal approbation of the House of Commons. The duties imposed upon French merchandise, in pursuance of the late commercial treaty, were also included in the same act, although that part of the measure was resisted by opposition.

On the 28th of March Mr Beaufoy, at the request of the deputies of the dissenting congregations about London, moved for the repeal of the corporation and test acts. He observed that the test act was originally levelled against the Roman Catholics, and the corporation act against those sectaries who had agitated the kingdom in the times of Charles I. and during the usurpation, but with whose character the dissenters of the present age had nothing in common; and he contended that, as every man had an undoubted right to judge for himself in matters of religion, he ought not, on account of the exercise of that right, to incur any punishment, or to be branded with what is undoubtedly a mark of infamy, an exclusion from military service and civil trust. He referred to the examples of Scotland, Holland, Russia, Prussia, and the dominions of the emperor, in none of which religious opinions were now made the ground of civil disqualification. Lord North spoke against the proposed repeal, chiefly on the footing of the hazard attending innovation. He denied that a man was subjected to any punishment because he did not choose to receive the sacrament of the Lord's Supper according to

the usage of the church of England. He only deprived himself of a privilege which he might otherwise enjoy, and which the law, for the safety of the church, had limited to persons of particular opinions. Mr Pitt supported the same view of the question, upon the ground of the danger to the established church which would result from intrusting official situations to dissenters. Mr Fox supported the motion in favour of the dissenters; remarking, however, upon this occasion, that, from their conduct in a late political revolution, he could not be suspected of being biassed by an improper partiality towards them. The motion was lost on a division by a majority of seventy-eight.

On the 20th of April Mr Alderman Newnham brought under the view of the House of Commons the pecuniary situation of the Prince of Wales, whose affairs had at this time fallen into a state of embarrassment. In 1783, when the prince came of age, Mr Fox and his colleagues, who were then in office, wished to grant him an annual income of L.100,000; but his majesty insisted that he should only be allowed one half of that amount. In the year 1786 the prince, having contracted a debt of L.100,000, exclusive of L.50,000 expended upon Carlton House, applied to his majesty to obtain relief from this incumbrance; and on receiving a refusal, he instantly dismissed the officers of his court, ordered his horses to be sold and the works at Carleton House to be stopped, and reduced his household to the scale of that of a private gentleman. By these savings an annual sum of L.40,000 was vested in trustees for the payment of his debts. But this decisive and spirited conduct was represented at court as disrespectful to the king; and from the period in question his majesty's dissatisfaction with the prince appears to have been no longer concealed. On the occasion of the assault made upon the king's person by Margaret Nicholson, no notice of the accident was sent by the court to the Prince of Wales; and when, on receiving the intelligence, he instantly repaired to Windsor, he was received there by the queen, but the king did not see him. In these circumstances the prince permitted his situation to be brought before the House of Commons, with a view of submitting his conduct to the judgment of the public. Accordingly, on the day already mentioned, Mr Newnham demanded of the chancellor of the exchequer whether ministers intended to bring forward any proposition for the relief of the Prince of Wales; at the same time alleging, that it would be disgraceful to the nation to suffer him to remain longer in his present reduced circumstances. Mr Pitt replied, that he had received no commands from his majesty upon the subject, and that without such it was not his duty to bring forward an affair of this nature. Mr Newnham then intimated his intention of bringing forward a motion on the subject upon the 4th of May. But on the 24th of April Mr Pitt requested to know the precise nature of the intended motion; stating his wish to avoid a discussion of the subject, and adding, that if it was persisted in, he would be under the necessity of bringing before the public some circumstances of extreme delicacy. At the same time Mr Rolle, an adherent of the ministry, declared that the question involved matter by which the constitution both in church and state might be essentially affected. This menace was believed to allude to an intimate connection supposed to subsist between the prince and Mrs Fitzherbert, a lady of a Roman Catholic family, with whom it was alleged that the prince had been married both by Catholic and Protestant clergymen, although such a proceeding, even if it had taken place, could be productive of no legal effects, in consequence of the provisions of the royal marriage-act. Mr Newnham replied, that his intended motion would be for an address to his majesty to relieve the Prince of Wales from his present difficulties; and when some members expressed a wish that

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the affair might be privately accommodated, Mr Sheridan declared, that after the insinuations and threats which had been made, the prince could not possibly recede with honour. Accordingly, on the 30th of April, when the subject was again mentioned, Mr Fox, who had been absent during the former debate, stated, that he had authority from the prince to say, that there was no part of his conduct which he would not willingly submit to public investigation. The allusions made to something full of danger to the church and state he treated as a tale fit to be imposed only on the lowest of the vulgar; and added, that his royal highness was ready, in the other house, as a peer of parliament, to give his majesty, or his ministers, any assurances or satisfaction on the subject which they might require. Mr Fox, at the same time, directly assured the house that the whole story alluded to was untrue. The result therefore was, that an accommodation took place. The prince was allowed an annual addition to his income of £10,000, and a sum of £180,000 was granted by parliament for the payment of his debts.

But the subject which chiefly occupied the attention of parliament during the present session was the accusation of Mr Hastings. After examining Mr Middleton and Sir Elijah Impey as witnesses in the beginning of February, Mr Sheridan, on the 7th of that month, opened the third charge against Mr Hastings, which set forth, that without justice, or any excuse of political necessity, he had seized the lands, and confiscated the treasures, of the begums or princesses of Oude, the mother and grand-daughter of the reigning nabob, and that he had even compelled the latter to become the instrument of this robbery. Mr Sheridan's speech lasted five hours and a half. The subject of the charge was well fitted for a display of all the powers of pathetic eloquence, owing to the rank and sex of the parties whom, on this occasion, Mr Hastings was accused of having treated with the most barbarous rapacity, treachery, and cruelty. Every advantage was taken of these circumstances by the eloquent accuser; and Mr Sheridan's discourse was considered as a model of splendid and impressive oratory. When he sat down, the whole house, which was filled with members, peers, and strangers, instantly joined in a loud and long-continued tumult of applause, expressing their approbation in the irregular mode of repeatedly clapping with their hands. Mr Burke declared it to be the most astonishing effort of eloquence, argument, and wit united, of which there was any record or tradition; Mr Fox said, that all that he had ever heard or read, when compared with it, vanished like vapour before the sun; and Mr Pitt asserted, that it surpassed all the eloquence of ancient or modern times, and possessed every resource which genius or art could furnish to control and agitate the human mind. After a short suspension of the debate, some of Mr Hastings' friends attempted to speak in reply, but found it impossible to procure a hearing. At last some members proposed, that for the sake of decorum, the debate should be adjourned; and this proposal was carried. On the following day Mr Francis resumed the charge, which was opposed by Mr Burgess, Major Scott, Mr Nichols, Mr Vansittart, and Mr Alderman le Mesurier. After having heard the arguments on both sides, Mr Pitt rose, and having stated the sense he entertained of the high importance of the procedure against Mr Hastings, and his endeavours to give to every fact stated in each particular charge the fullest investigation, declared himself fully satisfied that criminality was brought home to Mr Hastings, though not perhaps to the full extent alleged by the accusers. The motion for accusation was accordingly carried, upon a division, by a very large majority.

At a future period of the session other charges were

brought forward, and opened by Mr Thomas Pelham, Sir James Erskine, Mr Windham, and Mr Francis. Mr Pitt adopted the cause of the accusers, and on some occasions, though in a very mild tone, Mr Dundas did the same. At one period Lord Hood stood forward, and, in a very solemn manner, requested the attention of the house to the consequences of proceeding, with too scrupulous a nicety, to canvass the conduct of those who had filled stations abroad of high difficulty and important trust. Certain actions, which appeared to those at a distance in a very criminal light, were yet, he alleged, on a nearer investigation, perfectly justifiable on the grounds of absolute and indispensable necessity; and if the dread of an impeachment by parliament were to be hung over every commander in whose hands was placed the defence of our national possessions, it must necessarily operate as a dangerous restraint on their exertions, when it was considered that no general nor admiral had scarcely ever been fortunate enough to conduct himself in the performance of his duty, so as not occasionally to fall into circumstances in which the public service compelled him to do things in themselves neither pleasing to his feelings, nor strictly legal, but, from the indispensable necessities of their situation, perfectly justifiable. But Mr Pitt denied that these sentiments had any application to the case of Mr Hastings, since no adequate political necessity had been pointed out which could justify his conduct. In the course of the proceedings, also, it appeared that several members were disposed to consider the merits of Mr Hastings as in some measure compensating his crimes; and thus, although they voted his conduct criminal on particular occasions, they had an intention of voting in his favour when the general question should come to be proposed about the propriety of proceeding to impeachment. But Major Scott took an opportunity to declare that Mr Hastings and his friends wished to decline such a mode of defence; and he read to the house as a part of his own speech, a paper signed by Mr Hastings, in which he requested, if a general vote of criminality should pass against him, that they would further proceed instantly to an impeachment, and thus afford him an opportunity of defending himself judicially.

A committee was at length appointed to prepare articles of impeachment against Mr Hastings. It consisted of Mr Burke, Mr Fox, Mr Sheridan, Sir James Erskine, the Right Honourable Thomas Pelham, the Right Honourable William Wyndham, the Honourable St Andrew St John, John Anstruther, Esq. William Adam, Esq. M. A. Taylor, Esq. Welbore Ellis, Esq. the Right Honourable Frederick Montague, Sir Grey Cooper, Sir Gilbert Elliot, Dudley Long, Esq. Lord Maitland, the Honourable George Augustus North, General Burgoyne, and Mr Grey. An attempt was made by Mr Burke to procure the appointment of Mr Philip Francis as a member of this committee, but without success. On the 25th of April Mr Burke presented the articles of impeachment, which were read, and ordered to be printed, and considered on the 9th of May. Upon that day Lord Hood repeated his former arguments, and was supported by Mr Smith and the notorious John Wilkes. This last person insisted strongly on the silence of the natives of India respecting the dreadful oppression said to have been practised against them, and attributed the greater part of what appeared criminal in the conduct of Mr Hastings to the craving and avaricious policy of this country, whose demands had in some instances driven Mr Hastings to the use of means not strictly justifiable. The amount of the charges, supposing the facts to be true, was, in his opinion, this, that Mr Hastings, by oppression, by injustice, and by corruption, had obtained for the East India Company nine millions and a half sterling. Mr Wilkes thought

gn of the acts complained of politic and just, and declared that he could not vote for the impeachment of Mr Hastings, while he benefited by his misdeeds. He added, that it appeared incomprehensible to him how gentlemen who condemned his actions suffered a day to pass without proposing retribution to the sufferers. The lord advocate of Scotland, Mr Hlay Campbell, also supported this view; considering the necessities of the Company, and the dangerous crisis of their affairs, as grounds of justification for the strong measures pursued by Mr Hastings, in order to extricate them; and declaring that, as the Company had actually reaped the benefit of them, and so far approved of them as never to signify any intention of restitution, he could not conceive with what propriety Mr Hastings could be impeached. Mr Pitt acknowledged that many measures during the administration of Mr Hastings were uncommonly brilliant, and that in these his merits were unquestionable; but he trusted that no man who seriously regarded the honour of the House of Commons would think that the justice of the country could admit of any compromise whatever.

The question of impeachment was therefore carried by a large majority; and on the 10th of May, at the bar of the House of Lords, Mr Burke, in the name of the House of the Commons of Great Britain, impeached Warren Hastings, Esq. late governor-general of Bengal, of high crimes and misdemeanors; and informed the Lords that the Commons would, with all convenient speed, exhibit and make good articles against him. On the 21st of the same month, upon the motion of Mr Burke, Mr Hastings was taken into the custody of the serjeant at arms of the house; but he was immediately admitted to bail by the House of Lords, himself in the sum of L.20,000, and two sureties in L.10,000 each. But as the session of parliament was prorogued on the 30th of May, the trial was necessarily postponed to another session, and by various delays it was ultimately protracted to an extraordinary length.

The impeachment of Mr Hastings, from the attention which it excited, and the talents which were exerted in carrying it through, undoubtedly forms an event of considerable importance in British history. It ended in the acquittal of the party accused; but the immense expense which he incurred, and the uneasiness which he must have suffered from the odium excited against him, unquestionably amounted to a very severe punishment. A British House of Commons held him guilty of inhumanity, rapacity, perfidy, and tyranny, towards a numerous and civilised people, who had been subjected to his power; and these sentiments were so widely diffused throughout Great Britain, that the minister of the day, always studious of popularity, thought it necessary to join in the general current of opinion. But to enable the reader to appreciate correctly the merits of Mr Hastings, or the reasonableness of the accusations which were brought against him, it is necessary to consider correctly the situation in which that gentleman stood. He was invested by the British East India Company with absolute power over a large portion of Hindustan, in order to govern for the profit of the Company, and if possible to acquire for them still more extensive territories. To fulfil the purposes for which he was employed, it was necessary for him to procure a large revenue for the Company, and at the same time to enable the young men of rank, whom they sent out in their service, to return speedily to Britain loaded with wealth; these being the only objects on account of which the East India Company, or the British nation, had made efforts for the conquest of the East. But such objects evidently imply, not that Hindustan was to be mildly and generously governed, but that it was to be plundered to the utmost

extent which it could bear without ruin. Accordingly, in 1782, Mr Hastings, in one of his letters, complained strongly of the cruelty of his situation, and of the expensive establishments and offices which he was under the necessity of constituting in India, in order to gratify the avarice of his employers; declaring that he had at that time about him two hundred and fifty persons, the younger sons of the first families in Britain, all looking up to him for patronage, and expecting to be put in possession of sudden riches. But these riches, it is evident, could not be drawn from the natives of Hindustan without much oppression; and when this oppression produced rebellion, or combinations of the native princes against the British power, it became necessary to be guilty of further oppression, or more grievous extortion, to collect means by which to overcome the resistance of an oppressed people. It is admitted on all hands that Mr Hastings was almost unboundedly successful in the service of his employers. He sent home annually great numbers of men loaded with the plunder of the East; while at the same time, by great activity and intrepidity, he collected resources wherewith to maintain and extend the British power, and was enabled to support it in all quarters against the most extensive combinations of the princes of that country. Now there are two systems of morality according to which the character of such a man as Mr Hastings may be tried. The one is founded upon the principle of obedience to his employers, and fidelity to the trust reposed in him; and the other upon the eternal law of humanity. According to the first of these, that conduct is most worthy of applause which tends in the highest degree to promote the interest of those whom we serve; and, considered in this point of view, the merits of Warren Hastings have seldom been surpassed. It is true that he plundered the provinces of the East; but it was to aggrandise and enrich his country that he did so. He accounted their persons and fortunes as of little consideration; but he did so because he was the devoted servant of Britain. Accordingly, the French, whose public enemy he had been, regarded him with admiration, and uniformly extolled his actions as more than human. But if, in opposition to all this, we are to weigh the conduct of Mr Hastings by those maxims of morality which assume the immutable law of humanity as the rule by which human actions ought to be regulated, there can be no doubt that he must be condemned. He can only be regarded as one of those robbers of nations, to whose crimes historians and poets have given a too fatal celebrity. He was guilty of plundering and oppressing a pacific race of men, at the extremities of the earth, in whose affairs neither he nor his country had any right to interfere. But the principal criminals in this case were the British East India Company, the British legislature, and the British nation, who sent him upon such a service. Mr Hastings was only the guilty tool of a guilty people; and surely it ill became the British House of Commons, which had authorized the acquisition of conquests, or, in other words, sanctioned rapine and oppression, in the East, and whose constituents had become rich by the plunder or the profits of such enterprises, to accuse as a criminal the most successful servant of the state. John Wilkes and the lord advocate for Scotland appear, therefore, to have rested Mr Hastings' defence upon an unanswerable footing, when they considered his crimes as services, which he was employed by his country to perform for its aggrandisement, and for the moral rectitude of which he could not be responsible to that power from which he derived his commission, and which scrupled not to reap the fruit of his labours.

During the year 1787, the amity subsisting between Britain and France seemed likely to be disturbed, in consequence of the affairs of Holland. The grounds of dif-

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ference, indeed, were speedily adjusted; but the events out of which they arose are worthy of notice, on account of their tendency to explain some future occurrences in the history of Europe. The state of the Dutch republic always had been regarded as of much importance by Great Britain. That country, being situated upon the mouths of the navigable rivers which communicate with some of the most important parts of the European continent, holds as it were the keys of the different passages by which our manufactures reach their places of ultimate sale and consumption; and in the most important efforts for reducing the power of France, the Dutch had acted along with the British nation. In the history of the United Provinces, during a couple of centuries, two parties were always found struggling for superiority. The one was that of the house of Orange, which had been originally raised to power in consequence of the talents of its chiefs, united with their rank and property, which had induced the states to intrust to them the direction of their armies, first against the Spanish monarchy, from which the united provinces had originally revolted, and afterwards against the power of France. By their great public services, the princes of the house of Orange had established in their own favour a kind of hereditary claim to the offices which they held in the republic, of stadtholder, captain-general of the forces, and admiral; and thus there existed in their persons, in succession, a kind of limited monarchy, by which the Dutch republic was influenced and led, rather than formally governed. The second party in the Dutch republic consisted of a kind of aristocracy, composed of the senates or town-councils of different cities, which possessed the power of nominating to the vacancies in their own order, that is, of electing their own successors in office. This party was usually denominated the Party of the States, or the Republican Party. Its members were, in point of form, the sovereigns of the country, as well as the wealthiest individuals in it; and the chief constitutional control which the stadtholder possessed over them, was founded on a regulation established by William III. prince of Orange, in 1674, by which he enjoyed a negative in the elections of town governments, and a power, in certain cases, of introducing members into them. But it is to be observed, that the mass of the people, who always find greater safety under the dominion of one superior than under that of a multitude of petty local chiefs, were decidedly attached to the house of Orange, or to the power of the stadtholder, in opposition to that of the town senates or republican party; and the ancient nobles also, together with the clergy of the established church, and the officers of the army and navy, adhered to the same family, and thereby enabled it on ordinary occasions to support its power against the party of the states.

During the participation of the United Provinces in the late war against Great Britain, a proposal had been made to enrol bodies of volunteers in the different towns, for the purpose of internal defence. The senates of the towns, that is, the aristocratical, or, as they called themselves, the republican party, encouraged the formation of these armed bodies of burghers, over whom at their first enrolment they had complete influence, as affording them a kind of counterpoise against the military power, which, although paid by them, was commanded by the stadtholder. But these bodies of citizens, as soon as they had been trained to the use of arms, began to be sensible of their importance. The opinions propagated in North America during the war were known over all Europe, and being received with considerable avidity by the Dutch volunteers, produced in that country a kind of third or democratic party, the object of which was to procure for the citizens of the towns a share in the nomination of the magistrates. But as the

volunteer associations were originally the creatures of the senates or aristocracy, for the purpose of counteracting the power of the stadtholder, so they appear, in their first movements, to have been directed by that faction. One of these movements took place at Utrecht. The armed burghers, amounting to upwards of two thousand, presented a petition to the states of the province of Utrecht, requesting them to abolish the regulation of 1674, by which the stadtholder was enabled to influence the nomination of the magistracy; and they presented an address of a similar nature to the town senate of Utrecht, and to the prince of Orange. As might have been expected, the answer of the prince was unfavourable; but the magistrates of Utrecht, in compliance with the wishes of the armed burghers, proceeded to fill up a vacancy in their own number without consulting the prince. This event occurred in January 1784; but it appears that, in the course of the same year, either from the intrigues of the stadtholder's court, or a dread of betaking themselves to the assistance of the new and dangerous democratic party, the states of the province and town senate of Utrecht deserted the cause of the armed burghers, whom they themselves had instigated to action, and recalled or annulled the steps towards innovation which they had previously taken. Meanwhile the senate and the armed burghers continued alternately to menace each other. But, by degrees, a spirit of political reform diffused itself from Utrecht to the different towns in the provinces where bodies of volunteers or armed burghers had been established. The armed burghers of Utrecht elected a representative body to watch over the management of public affairs, and various other towns followed the example; but these representative bodies soon quarrelled with the old senates; and the prince of Orange appears to have had it in his power to select either of the parties he might think fit as his adherents. His ancient enemies were the aristocracy or town senates; but as he could not, without a total alteration of the constitution of the United Provinces, derive a regular and legal support from the bodies of armed burghers, he resolved to support the ancient magistracies, and to rest his power upon its former footing of influence over these magistracies, though he knew them to be his rivals in political importance. It would seem, however, that the aristocracy of the province of Holland, who had always been the most decided enemies of the family of Orange, were not satisfied with the disposition of the prince to support the ancient constitution, and resolved to undermine or overthrow his power, even at the hazard of a revolution, which must be equally fatal to their own. But this aristocratical body was not of an enterprising character, and rather waited than attempted to direct the course of political events; while, in consequence of the support afforded by the stadtholder to the senates of Utrecht and other places, the armed burghers throughout the whole United Provinces became disposed to act in opposition to him. Meanwhile the populace of the Hague retained their usual attachment to his person and family. On the 4th of September 1785, twelve volunteers of the corps of the town of Leyden appeared at the Hague in uniform. Offended by this apparent defiance, the populace attacked and drove them into a neighbouring house, the windows of which they smashed; but a part of the garrison, without interfering with the populace, took the volunteers into custody, and sent them home privately by night. This riot, however, served as a pretext to the states of Holland for superseding the prince of Orange in the command of the garrison at the Hague, which they intrusted to the deputies of Haerlem, a town long noted for its zeal in opposition to the stadtholder; and as the prince had been engaged in endless controversies with the states of Holland, in which the strength

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In the mean time Frederick II. of Prussia died, and was succeeded by his nephew, Frederick William, the brother-in-law of the stadtholder. The French court appeared to espouse with vigour the combined aristocratical and democratical parties in the United Provinces; but the new king of Prussia hesitated to engage in a dispute with France; and there is little doubt that, had the French on this occasion shown themselves ready to act with vigour in support of their party in Holland, the stadtholder must have fallen before his enemies. But the French monarchy, under a benevolent and well-meaning though weak prince, was at this period rapidly sinking into a state of great feebleness, owing to the extreme embarrassment of its finances. A negotiation was indeed proposed between the courts of France and Berlin, for the purpose of adjusting, in some friendly manner, the differences between the stadtholder and his enemies. But the weakness of France becoming gradually more apparent, Prussia and Great Britain were induced to take a more decisive part in the affairs of Holland, chiefly in consequence of the suggestions of the British ambassador at the Hague, Sir James Harris. The stadtholder, who had now established himself at Nimeguen, was a man of little activity or enterprise; but his princess being of a different character, ventured to undertake a journey to the Hague, unaccompanied by her husband, probably with a view to what actually happened. On the 28th of June 1787 she was arrested by some troops of the opposite party; and this circumstance afforded an excuse to the king of Prussia for interfering in the internal affairs of the United Provinces, in order to demand reparation for the insult offered to his sister.

A Prussian army, commanded by the Duke of Brunswick, the brother-in-law of the king of Great Britain, immediately prepared to invade Holland; and to secure additional aid to the Prince of Orange, a treaty was concluded between Great Britain and the landgrave of Hesse-Cassel, for the assistance of twelve thousand troops. In the mean time the United Provinces remained in a state of great internal distraction. The defects of their political constitution had originally occasioned the appointment of a stadtholder; and there had yet been substituted in its stead no simple system, which, by doing away the distinctions of states and provinces, might unite the force of the country, for the purpose of enabling it to resist such powerful aggression as that with which it was now threatened. The promised aid from France did not arrive; and although troops had been levied by the states of Holland, the chief command of them was intrusted to the rhingrave of Salm, a man whose character appears to have inspired little confidence. Meanwhile the Duke of Brunswick, at the head of a powerful army, entered the country. The reputation of the Prussian armies in Europe was at this time extremely great; and the frontier towns of Holland, which were capable of resisting regular sieges, were now taken without a struggle. It is unnecessary to detail the progress of the Prussian troops, which was extremely rapid, since in little more than a fortnight the republican party found itself confined to the city of Amsterdam. This city was besieged on the first of October; and after much negotia-

tion, and a variety of attacks, it admitted a foreign garrison to take possession of its gates. The influence of France was thus totally annihilated in Holland, and the authority of the stadtholder restored; but it was restored by the power of Prussia and Britain alone; and the consequence was, that a decided enmity to these two countries, from that period, took possession of the minds of a great portion of the inhabitants of the Dutch territories.

When the British parliament met on the 27th of November 1787, the most remarkable circumstance alluded to in the king's speech was the state of Holland. It was there mentioned, that the disputes in the republic of the United Provinces had become so critical as to endanger their constitution and independence; that his majesty had endeavoured by good offices to maintain the lawful government of those countries, and judged it necessary to explain his intention of counteracting forcible interference on the part of France; that, accordingly, when his most Christian majesty, in consequence of an application for assistance by the party which had usurped the government of Holland, had notified his intention of granting their request, his majesty had declared that Britain could not remain an unconcerned spectator, and immediate orders had been issued for augmenting the forces both by sea and land; that the rapid success of the Prussian troops having soon after enabled the provinces to re-establish their lawful government, an amicable explanation had ensued between him and the most Christian king; and that both parties had engaged to disarm, and to place their naval establishments on the same footing as at the beginning of the year. When the address was moved, Mr Fox took an opportunity of expressing the fullest approbation of the measures which had been lately pursued, and took credit to himself as one of those who had invariably been of opinion that this country is at all times deeply interested in the situation of affairs upon the Continent, and ought, whenever occasion required, to take an active and vigorous part in preserving the balance of power in Europe. In the House of Lords the Bishop of Llandaff also expressed his satisfaction at seeing the republic of the United Provinces again united in its views with Great Britain.

During the interference of Great Britain and Prussia in the affairs of Holland, and whilst a dread was entertained that the discontented party in the provinces might receive assistance from France, and preparations were on that account made for fitting out a fleet, the lords of the admiralty had promoted sixteen captains of the navy to the rank of admirals. In this promotion a selection had been made, by which upwards of forty senior captains were passed over; a circumstance which gave rise to various debates in parliament. To understand the subject, it is necessary to remark, that in 1718 an order of council directed the lords of the admiralty, in promoting officers to the rank of admirals in the navy, to prefer the senior captains, providing only that they were duly qualified for the rank to which they were to be promoted. And by a subsequent order of 1747 the lords of the admiralty were authorized to place such captains as should be found incapable, by reason of age or infirmity, of serving as admirals, upon the list of superannuated admirals, usually called the list of the yellow admirals. In the promotion above mentioned the board of admiralty had offered to place upon the list of yellow or superannuated admirals most of the captains who were passed over; but these, from their capacity for future service, conceiving themselves entitled to the rank of acting admirals, had refused the retreat which was offered them; and a general disgust prevailed among the officers in the navy, on finding that their hopes of employment in active service must at all times depend on their interest with the first lord of the admiralty. On the 20th of February

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1788 Lord Rawdon, in the House of Lords, stated their case, and proposed an address to his majesty upon the subject. But the first lord of the admiralty, Lord Howe, justified the exercise of a discretionary power by the board in promoting navy captains to the rank of acting admirals, upon the ground that a man might be fit to command a single ship who ought not to be intrusted with the care of a fleet; and Lord Sandwich admitted the impropriety of interfering with the executive government in an affair of this nature; upon which Lord Rawdon's proposal was rejected. The same subject was also brought before the House of Commons in various forms, and supported by almost all the naval officers who had seats in the house. But Mr Pitt defended the admiralty, by declaring that no degree of misconduct had been stated sufficient to authorize the interference of parliament with the exercise of its powers; and the board was protected from censure by a small majority.

At this time a bill was brought into parliament for subjecting to higher penalties than formerly all persons who should export wool from the country, the object of it being to confirm the monopoly enjoyed by our own manufacturers in that article. The manufacturers asserted, that thirteen thousand packs of British wool were annually smuggled into France, which tended to raise the price of the commodity against our own manufacturers. Several country gentlemen, however, opposed the bill, as an unjust hardship upon the profits of land in this country, which ought to have the world open as a market for its productions; but the minister, who was aware of the importance of enjoying popularity with the commercial part of the nation, gave full countenance to the bill, which accordingly passed into a law.

In his financial exposition of the revenue, Mr Pitt made some remarks as to the improving state of the country, which are not unworthy of being noticed. He stated that the receipt of the permanent taxes, in the year 1787, exclusive of the land and malt tax, had been L.13,000,000, whereas the receipt of the taxes in the year 1783 had only been L.10,184,000. Thus there was an increase of revenue amounting to three millions, of which not more than one million and a half accrued from new taxes. In trade, navigation, and fisheries, the progressive improvement had kept pace with the increase of revenue. In the year 1772 the imports were L.14,500,000, and the exports L.16,000,000; in 1787 the imports were about L.15,800,000, and the exports amounted to L.16,600,000. Navigation had in like manner increased. The Newfoundland fishery in 1773 produced 516,000 quintals; but in 1786 it produced 732,000. In 1773 the Greenland fishery gave employment to 27,000 tons of shipping; but in 1786 the amount employed was 53,000. The southern whale fishery, a new and valuable branch of trade, which only commenced at the beginning of the last war, had also prospered equally. In this fishery, in 1785, there were employed eighteen ships, producing L.20,000, whereas in 1787 there were employed thirty-eight ships, producing L.107,000. The general result, therefore, showed that the commerce and industry of the country were in a prosperous condition, and extending themselves in every direction.

On the 8th of June Mr Pitt called the attention of the house to the compensation which was intended to be made to the American loyalists, on account of the losses sustained by them from their adherence to this country during the American war. He divided the loyalists who had made claims of compensation into four classes. In the first class he ranked those who had resided in America at the commencement of the war, and who had been obliged to abandon their estates and property, which were seized and confiscated by the Americans, and he proposed

that loyalists of this class who had not lost more than L.10,000 should receive full compensation; for losses above that sum, and below L.35,000, ninety per cent. on the excess above L.10,000; for losses above L.35,000 and under L.50,000 eighty-five per cent. on the excess above L.10,000; and for losses above L.50,000 eighty per cent. on all above L.10,000. The next class of claimants, consisting of those who had lost property in America, but who had resided in England during the war, Mr Pitt proposed to indemnify also in full to the amount of L.10,000; but that all whose claims amounted to from L.10,000 to L.30,000 should suffer a deduction of twenty per cent., and a further additional deduction of twenty per cent. in progression upon every additional L.50,000 claimed. Of the third class of claimants, consisting of loyalists who had enjoyed places and exercised professions in America, which, by adhering to this country, they had lost or been forced to abandon, he proposed to put upon half pay those whose incomes amounted to no more than L.400 per annum, and to grant forty per cent. upon any excess of income above L.400 per annum, unless the income exceeded L.1500 per annum, in which case thirty per cent. only was to be allowed upon the excess of income above L.400 per annum. Lastly, it was proposed to pay the full amount of their claims to persons connected with West Florida, because, by the treaty of peace, that country had been ceded by Britain to a foreign power. Mr Pitt concluded by moving, that, in order to satisfy these claims, L.1,228,239 should be voted to the several American claimants, and L.113,952 14s. 3d. to the Florida claimants; and the motion was unanimously agreed to. The liberality with which the British nation acted upon this occasion merits high approbation, as an instance of the wisest policy, from its tendency, in future discontents or insurrections in the subordinate parts of the empire, to secure the attachment of persons of property to the cause of the mother country. As the claims of the American loyalists were stated by themselves, and not scrutinized with extreme severity, it was generally understood that these persons were in very few instances ultimate losers by the part which they had taken; a circumstance of which the public did not disapprove.

The trade carried on by Great Britain and other European nations upon the coast of Africa, for the purchase of negro slaves to be employed in the cultivation of the West India islands, and certain parts of the continent of America, does not appear to have been at this time considered with that general attention which a practice so abhorrent in its nature to the mild principles of modern policy and manners might have been expected to excite. This may probably have been owing, partly to the distance of the object, which tended both to conceal the sufferings, and to lessen the sympathy of the public for the unfortunate sufferers; and partly to the connivance of politicians, unwilling to examine too severely into the nature of the means by which distant colonies were enabled to pour luxury and wealth into the bosom of the mother country. The first public attempt made to put a stop to this traffic was by the Quakers of the southern provinces of America, who, soon after the establishment of their independence, not only presented a strong and pathetic address to their several legislative assemblies on this subject, but actually proceeded in many instances to emancipate the slaves in their own possession. In Great Britain the same sect appears also to have taken the lead; and, after the example of their American brethren, they presented, in 1787, a petition to the parliament of this kingdom. The cause soon afterwards became extremely popular, and was taken up with great zeal and earnestness by various descriptions of people. A society was formed; a considerable sum of money was subscribed for the purpose of collecting infor-

Rea of Geo. III. mation and supporting the expense of an application to parliament; a great number of pamphlets were published upon the subject; several eminent divines recommended the abolition from the pulpit and in printed discourses; and, in the present session, petitions against the slave-trade were presented from the two English universities, and from several of the most considerable towns and corporations in the kingdom. By a sort of general consent, Mr Wilberforce had been intrusted with the care of bringing the business before the House of Commons; but he being prevented by ill health, Mr Pitt, on the 9th of May, proposed that the house should come to a resolution to take into consideration the circumstances of the slave-trade early in the next session. He added, that the privy-council had appointed a committee to inquire into the matter, and that next session the result would probably be laid before the house to facilitate their investigations. Mr Fox and Mr Burke expressed their regret on account of the proposed delay; lamenting that the privy-council, who had received no petitions from the people, should have instituted an inquiry, and that the House of Commons, whose table was loaded with them from every part of the kingdom, should not have instituted an inquiry at all. Sir William Dolben called the attention of the house to the condition of the slaves in that intermediate state of misery which they suffered in their transportation from the coast of Africa to the West Indies, entering into a short detail of the horrors of the middle passage, and declaring himself ready to bring evidence to the bar to prove the fact. This called aloud for a remedy, and that remedy ought to be applied immediately; for if parliament delayed doing so, ten thousand lives would be lost between the present session and the beginning of the next. This suggestion met with general approbation; and a bill was accordingly brought in and passed into a law for regulating the transportation of the natives of Africa to the British colonies in the West Indies.

During this session the affairs of India still continued to occupy the attention of the legislature and of the public. Under the apprehension of a rupture with France on account of the affairs of Holland, government had resolved to send out four additional regiments to India, on board the Company's ships, for the protection of our possessions in that quarter; and the proposal had been received with approbation by the court of directors; but even after the danger was past, government still adhered to their resolution of sending out these regiments, with a view to form a permanent establishment of king's troops in that quarter of the world. Hence a question arose with the court of directors of the East India Company, about the expense of sending out, and afterwards paying, these troops. By an act passed in the year 1781, the Company were declared liable for the expense attending such troops only as should be sent out upon their own requisition. But administration now contended, that the act brought forward by Mr Pitt in 1784, which gave to the board of control a power of counteracting the orders of the court of directors, and of directing the application of the Company's revenues, ought to be understood as authorizing that board to carry into effect the proposed measure. The court of directors, however, having obtained the opinion of some eminent lawyers in their favour, refused to take the troops on board the ships which were about to sail for India; and for this reason, on the 25th of February, Mr Pitt proposed, in the House of Commons, that all difficulties should be removed by a declaratory act, stating the intention of the legislature, in the act of 1784, to have been conformable to the construction put upon it by the board of control. This mode of proceeding was strongly opposed, upon the grounds that the claims of government upon the Company ought to be tried in a court of law, instead of being brought be-

fore the House of Commons, where administration possessed an undue influence; that the measure was in itself ill judged, as it would have been more economical to permit the Company to raise four regiments, which would have enabled them to provide for many of their own officers, who were living in India in very distressed situations, in consequence of having been reduced at the peace; and that the mode of sending out recruits to complete the king's regiments at that time in India might have been adopted with more advantage to the Company, as it would have enabled them to avoid the additional burden of all the officers of four new regiments. But the point on which the declaratory act was chiefly resisted referred to its tendency to deprive the East India Company of the management of its own affairs, and of the patronage arising from its revenues, which, at the time when Mr Pitt's bill was passed, had never been understood to be the intention of the legislature or of government. Mr Pulteney, and some other members who usually voted with Mr Pitt, now declared that they supported his bill in 1784 only because it appeared to preserve uninjured the rights of the East India Company; and that the construction attempted to be put upon it in the declaratory act rendered it fully as obnoxious as the celebrated bill rejected by the Lords in 1783; with this difference only, that what the one had for its professed object only and without disguise, the other was attempting to effect by fraud and dissimulation. Other members also expressed similar sentiments, which excited great triumph on the part of Mr Fox and his friends, who loudly congratulated themselves upon the complete justification which his India bill had now obtained, by the tacit confession of his adversaries themselves. In support of the declaratory act, Mr Pitt contended, that the express object of the institution of the board of control was to take the entire management of the territorial possessions and the political government of India out of the hands of the Company, leaving them only the direction of their commercial concerns; that the board of control was in future to be responsible to the public for the prosperity and safety of our Indian possessions, and was therefore to be invested with the powers necessary for the due discharge of its important duties; and that administration in 1784 had not held any other language with regard to its nature, or the authority which it was to possess. On the 5th of March the bill was passed by a considerable majority. In the House of Lords the Marquis of Lansdown opposed it on nearly the same grounds as had been urged in the Commons, but with as little success. And upon the whole, if the augmentation of the power of the crown was at this period a misfortune, it was a misfortune which the conquest of India appears to have rendered inevitable. The East India Company, by whom the conquest had been made, was admitted to have shown itself unfit to govern that great country. The management of it, therefore, naturally devolved upon the executive government, unless the constitution itself was to be endangered, by intrusting the exercise of new and unusual powers to some branch of the legislature; or, unless a new kind of authority or power was to be created, like that attempted by Mr Fox's India bill, the result of which, as a political experiment upon the constitution, or mode of administering part of the affairs of the empire, was necessarily hazardous, because heretofore entirely without example in our history.

The attention of the nation still continued to be occupied in no small degree by the prosecution of Mr Hastings. The members of the committee which during the preceding session had prepared the articles of impeachment, were now appointed to act as managers for the House of Commons in conducting the trial; and on the

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13th of February the trial commenced with extraordinary solemnity in Westminster Hall, which had been fitted up for the purpose. At an early hour the Commons, preceded by the managers, issued from their own house into the hall, Mr Burke leading the procession; and thereafter came the Peers in procession, preceded by the clerks of Parliament, the masters of chancery, the serjeants at law, and the judges. That and the following day were consumed in reading the articles of impeachment, and in receiving the answers of Mr Hastings. On the 15th of February, Mr Burke began an oration, which he continued during that and the four following days, and in which his talents were exerted with great splendour, and his eloquence listened to with admiration. After an appeal to the justice of the court on the part of the people of India, he entered into a detail of the history of Hindustan from the earliest times; sketched a luminous outline of the revolutions which had occurred in it, of the civil and religious institutions, with the arts, customs, and manners of the various classes of its inhabitants; traced the progress of British intrusion, and minutely described the establishments effected by our countrymen; gave an animated account of the blessings which India might have derived from communication with the most enlightened nation in Europe; lamented that, instead of acting as friends or instructors of the natives, our countrymen had marked their way by treachery and rapine, and taught vice rather than virtue; expatiated on their usurpations of power, and their frequent enormities; specified the acts of Mr Hastings, representing them as beyond all bounds arbitrary and rapacious, and endeavoured to hold him up to execration as a monster of tyranny. The governor-general had attempted to justify his oppressions, by asserting that the Asiatic governments were all despotic; that he did not make the people slaves, but found them such; that the sovereignty he was called to exercise was an arbitrary sovereignty; and that he had exercised it in no other way than was done by the other sovereigns of Asia, and the native princes of the country. Mr Burke reprobated this geographical morality, and these claims to absolute power; denied that either the East India Company or the British government had it to bestow; asserted that no such arbitrary government was attempted to be justified in the East, every Mahomedan government being regulated by the laws of the Koran, while those of the Gentoos proscribed the idea of arbitrary will in magistrates; and contended that the conduct of tyrants, or the corrupt practices of mankind, were no principles upon which to regulate the duty of a British governor, bound to act, and liable to be judged by his country, upon British principles. Mr Burke concluded by declaring, that he impeached Mr Hastings in the name of the Commons of Great Britain, whose parliamentary trust he had betrayed, and whose national character he had dishonoured; in the name of the people of India, whose laws, rights, and liberties he had subverted, whose properties he had destroyed, and whose country he had rendered desolate; and in the name of human nature, which he had cruelly outraged in both sexes, in every age, rank, and condition of life.

The managers of the impeachment next proposed that they should come to a conclusion on both sides, upon each article separately before they opened another; but the counsel for Mr Hastings insisted that the House of Commons ought first to proceed to a conclusion upon the whole charges, before any part of the defence was demanded; and the House of Lords having deliberated on the point, decided it in their favour. The managers for the Commons acquiesced in the decision, and entered upon the particular charges, two of which employed the House of Lords during the remainder of the session.

During the investigations occasioned by the trial of Mr Hastings, and the discussion of India affairs, the opposition were led to bring forward a series of charges, importing high crimes and misdemeanours, against Sir Elijah Impey, formerly chief justice of the supreme court of Bengal. The substance of these charges, six in number, and which were presented to the House of Commons by Sir Gilbert Elliot, was, that the chief justice had in a variety of instances rendered himself the agent and tool of Mr Hastings, particularly in the decision of a considerable number of important causes. Sir Gilbert stated that Sir Elijah Impey had been declared criminal by parliament, before the parties into which it was at present divided had any existence; and that the proceedings out of which this accusation arose had been carried on by persons of all connections, and countenanced by the different administrations which had succeeded each other during the last six years. He contended that the only means left of reforming Indian abuses, was the punishment, in some great and signal instances, of Indian delinquency; and this proposition he endeavoured to establish by comparing the different force and efficacy of laws, arising from their penal sanctions, when applied in our own internal administration, and in the government of distant possessions. Of the particular charges brought against Sir Elijah Impey, that respecting the fate of Nundcomar, a Hindu prince of the sacred caste of the Brahmins, was the most remarkable. This man having had the weakness or imprudence to lodge an information, or rather accusation, with the East India Company, against their principal servant, Mr Hastings, the governor-general, it was alleged, had procured an accusation to be brought against him, in the court where Sir Elijah Impey presided; and Nundcomar having been tried for forgery on an English statute, was condemned and executed. In the course of the session, witnesses were examined against Sir Elijah Impey; and his defence was undertaken by the chancellor of the exchequer, and the solicitor and attorney-general. On the 9th of May the first charge was rejected by a small majority; and on the 27th the house voted a delay of procedure during three months. This saved the accused, and no impeachment resulted from the inquiry.

During the interval which followed the prorogation of parliament, the only occurrence worthy of notice arose out of the contests of the northern nations. At this period the relative condition of the European powers had undergone a very important change. During a century and a half the power of the monarchy of France had been formidable to all Europe; and, at different periods, the most extensive combinations had been found necessary to resist its ambition. But since the termination of the American war, that monarchy had evidently lost much of its importance among the neighbouring nations. Its influence over Holland had ever been one of its favourite objects of pursuit; but during the preceding year it had suffered that influence to be overturned without a struggle; and, as far as regarded any external effort, France appeared at this time to have fallen into a state of complete imbecility. The powers whose ambition had now become dangerous to the repose of Europe, were Austria and Russia. The latter, in particular, proved extremely restless and enterprising. The empress Catherine II. had contrived to engage in her views the emperor Joseph II. and had prevailed with him to engage in a sanguinary contest on the eastern frontiers of Europe, with a view to the partition of the provinces of Turkey; whilst France, the ancient ally of that power, was unable to afford it any countenance or aid.

In the mean time Catherine held in a state of dependence approaching to subjection the kingdoms of Sweden and Denmark. After the reign of Charles XII. whose

Reign of George III. extravagant military enterprises had exhausted the resources of the country, Sweden sunk into a state of political weakness. The nobles had resumed the independence of the feudal times; the anarchy to which that form of government is so remarkably subject had returned; the crown and the people were equally insignificant; and the mutual animosities of the nobles exposed the state to the intrigues of neighbouring nations. In their diet there was a French party and a Russian party, but there was not an individual among them who supported the party of Sweden. Gustavus III., however, was now in the vigour of his age, and a man of an enthusiastic and enterprising character. By attaching to himself the peasantry of the country and their deputies in the diet, he had, in 1772, re-established absolute power; but the nobles having gradually recovered a portion of their authority, and having been aided by the intrigues of Russia, had now become dangerous to the throne. This rendered the situation of the Swedish monarch extremely uncomfortable, and, exciting in his mind a desire of shaking off all dependence upon Russia, he resolved to take advantage of the war, in which she was actually engaged with the Turks, in order to make an attack on her north-western frontier. To accomplish this object, however, it was necessary that Sweden should be safe on the side of Denmark. But that power had already contracted engagements with Russia; and Gustavus having, it is said, afforded countenance and encouragement to the malcontents of Norway in 1772, this circumstance has been alleged by the Danes as an excuse for the treaty into which their government secretly entered, and by which it was agreed that, if Russia were attacked, Denmark would assist her with twelve thousand auxiliary troops and six ships of the line. But whatever may have been the conduct of the king of Sweden in 1772, he now endeavoured in the most anxious manner to conciliate the good will of Denmark, and at the close of the year 1787 paid an unexpected visit to the Danish court at Copenhagen, where he endeavoured by every argument to prevail with the prince regent and his council to enter into his views regarding Russia. But the court of Denmark could not be induced to countenance his schemes, and appears to have concealed its secret engagements with Russia, as well as the part which it meant to take in the event of a war between Russia and Sweden.

In the month of July the king of Sweden commenced offensive operations on the side of Finland. But the contents which had been fostered by Russia among the Swedish nobles soon broke out; several officers declared that the king had no right to make war without the consent of the states of the kingdom; and the troops refused to advance. Whilst the king was in this embarrassed situation, a Danish army suddenly advanced against Sweden under Prince Charles of Hesse-Cassel, accompanied by the prince of Denmark as a volunteer; and to give this force the appearance of an auxiliary army, the prince of Hesse had been created a field-marshal in the Russian service. The affairs of Sweden were now all but desperate. During the king's absence the senate of Stockholm had assumed extraordinary powers, and summoned a meeting of the states of the kingdom; but Gustavus unexpectedly arrived at Stockholm from Finland, put an end to their proceedings, instantly sent off the whole regular troops from the capital, and having assembled the citizens, declared that he intrusted to their fidelity the defence of his capital, and the protection of the queen and the royal family. His audience were seized with a military enthusiasm; the citizens armed and embodied themselves, and performed the whole duty of the garrison; while such of the officers as had returned from the army in Finland were insulted as traitors, and compelled to conceal themselves. The

king next hastened to the province of Dalecarlia, inhabited by a fierce and ignorant but honest people, celebrated for the share which they had in the revolution by which Gustavus Vasa rescued his country from the despotism and cruelty of Denmark, which had massacred the citizens of Stockholm, and almost exterminated the nobility of the kingdom; and the loyalty of these people being kindled to enthusiasm by this visit of the king to their mines and forests, four thousand of them instantly came forth as volunteers. In the mean time the Danish army, proceeding along the sea coast, which had been left undefended, took a body of Swedes prisoners, and advanced towards Gottenburg, which being mostly built of timber, was liable to instant destruction by bombardment. The place had actually been summoned, when the king, by unusual personal exertion, passed at the critical period unnoticed through the enemy's parties, and entered the city. His presence had the effect of restoring the confidence of the inhabitants, who resolved to encounter every hazard in defence of the city; but the place was thus saved only for a moment, and its situation, as well as that of the king himself, was still extremely perilous. On this occasion, however, the city, the king, and perhaps the monarchy of Sweden, owed their safety to the interference of a British subject, Mr Hugh Elliot, the British envoy at Copenhagen. From the first notice of hostilities, this gentleman, discerning the interests of his country and of Europe, passed over into Sweden, and offered his mediation to the king, at the same time that he threatened the Danes with an immediate invasion by a Prussian army, supported by a British and Dutch fleet. The Danish commander became intimidated, and delayed his threatened hostilities; a Prussian envoy soon arrived, and confirmed all the menaces of Mr Elliot; and the consequence was, that after much negotiation, a suspension of hostilities was concluded, and in the month of November the Danish troops evacuated the territory of Sweden.

At the close of autumn this year a domestic event of a singular nature, and new in the British history, occurred. The health of the sovereign had suffered, not from freedom of indulgence and excess of luxury, but from too severe a regimen, too laborious exercise, too rigid abstemiousness, and too short intervals of rest. As a remedy for the symptoms which manifested themselves, he was advised to resort to the medicinal waters of Cheltenham, and accordingly repaired thither immediately after the prorogation of parliament, and did not return to the metropolis till the 18th of August. But no material benefit had resulted from this excursion. His health continued in a precarious state; and on the 22d of October symptoms were observed by one of the royal physicians, of that alienation of mind which was afterwards the occasion of so many important and interesting transactions. For some time it was thought proper to observe the utmost secrecy respecting the nature of the king's indisposition; and the retreat of the sovereign at Windsor was favourable for this purpose. For several days an opinion was entertained that his indisposition arose from fever, and that it had attained so alarming a height as to threaten speedy dissolution; but the real nature of the malady could not long be suppressed. By the law and practice of the English constitution, almost every species of public business is, in some manner, connected with the exercise of the royal prerogative. The administration of the general government, in particular, was by this event virtually suspended; and notwithstanding the critical situation of Europe, and the very active share which we had taken in its concerns, it was now deemed impracticable to return any sort of answer to the dispatches of foreign courts, or even to those of our own ambassadors. In this situation the most natu-

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 ral expedient was to suffer the two houses of parliament, which stood prorogued to the 20th of November, to assemble at that time, and either to adjourn for a short interval, or proceed immediately to discuss the measures which it would be proper to adopt at such a juncture. Circular letters were accordingly addressed to the members of the legislature on the 14th, signifying that the indisposition of the sovereign rendered it doubtful whether there would be a possibility of receiving his commands for the further prorogation of parliament; that in such a case the two houses must of necessity assemble; and that a numerous attendance of the members was extremely desirable.

When parliament assembled, the lord chancellor observed in the House of Lords, that the reason of their being thus unusually called together without the ordinary notice, for the dispatch of business, arose from the severity of the king's indisposition, which had rendered it impossible for him to approach the royal person in order to receive his commands. Lord Camden remarked, that the customary practice of giving forty days' notice previous to the meeting of parliament, was not in his opinion absolutely necessary; that there was an express act of parliament, which limited the notice, in case of treason or rebellion, to fourteen days; that he would therefore recommend an adjournment for that term; and that the chancellor should, by order of the house, address an official letter to every individual peer. In the House of Commons Mr Pitt stated that every authority had been consulted respecting the present singular situation of affairs; that none pointed out either the possibility of directing a new prorogation, or of enabling ministers to open the session of parliament in any regular way; that, under these circumstances, it would be improper for the house to proceed to the discussion of any public business; and that it was absolutely necessary to adjourn. He therefore recommended the interval of a fortnight, when, if the king's illness should unhappily continue, it would be indispensably incumbent upon them to enter upon the immediate consideration of the state of public affairs; and he further moved a call of the house for the 4th of December, and that the speaker should be directed to send circular letters, requiring the attendance of every member on that day.

The tenor of the precedents afforded by the history of England was regarded upon the whole as in favour of a regency, under which the whole, or a considerable part of the power of the state, should be confided to the next heir to the crown, or to the adult of the royal family most nearly related to the king; and what rendered this consideration the more material upon the present occasion was, that the Prince of Wales was understood to entertain an avowed partiality for the political connection which had lately been instrumental in obtaining for him the discharge of his debts and an increase of his annual income, as well as some personal resentment against the ministers now in possession of office. Accordingly, soon after the indisposition of the king had been ascertained, the prince dispatched an express to Mr Fox, who was at that time in Italy, requesting his immediate presence to assist him in forming an administration. The ministers were also aware of the intentions of the Prince of Wales, and wished, if possible, to retain possession of office. Besides, as the duration of the king's illness was necessarily uncertain, and he might speedily be able to resume the reins of government, it was obviously their interest to procrastinate as long as possible; and they were enabled to do so in consequence of the tranquil state of the nation, which rendered the exercise of the executive power of less immediate necessity than in times of war or public alarm. The effect of mere reputation in supporting any political measure was remarkably illustrated on this occasion. Mr Pitt and

his colleagues in office were in possession of the public favour in a degree in which perhaps no ministers had ever before enjoyed it for so long a period of time. To Mr Fox and his associates still attached part of the odium which the coalition and the Indian bill had originally excited. The Prince of Wales himself was even less popular. The sobriety of his father's life formed a contrast to his youthful indiscretions; and the rumour of his marriage with Mrs Fitzherbert was still propagated, and met with credit. In this state of affairs the king's ministers, who had ceased to be any thing more than ministers by courtesy, had every advantage in their project of delaying as long as possible the relinquishment of their official situations, by placing the exercise of the royal authority in new hands. Mr Pitt likewise conducted himself with great dexterity in contriving subjects of discussion in the House of Commons; whilst his antagonists, in contending against him for victory upon speculative political questions, seem not to have been aware that they were in fact fighting his battle, by delaying the period of their own entrance into power.

Upon the re-assembling of parliament on the 4th of December, a report of the privy council, containing an examination of the royal physicians, was presented to the two houses by Lord Camden and Mr Pitt; and it was suggested, that when the delicacy of the subject and the dignity of the person in question were considered, parliament would probably perceive the propriety of acting upon this report, rather than of demanding that more direct and ample information to which, in strictness, they were entitled. This suggestion seemed reasonable, as it could scarcely be supposed that the ministers of the crown would act so directly in opposition to their own interests, as falsely to represent their master as incapacitated by mental disease for the exercise of his royal functions. Mr Fox, Mr Burke, and others, however, would not take any assurance upon this point, but insisted on the solemnity of an inquiry by a committee of the two houses. This was accordingly agreed to, and the report of the committee was laid upon the table of the House of Commons on the 10th, when a further proposition was moved by Mr Pitt for the appointment of a committee to examine precedents respecting those cases in which the personal exercise of the royal authority had been prevented or interrupted by infancy, sickness, infirmity, or any other cause. Mr Fox observed, that though he had no objection to the appointment of a committee for the purpose proposed, yet as it was notorious that no precedent existed which could be applied to the present case, he took the opportunity of stating as a general principle, that the king being at present incapable of holding the executive government, the Prince of Wales had as clear and express a right to assume the reins and exercise the power of sovereignty during the continuance of the present incapacity, as if his father were actually dead; but he added, that though the prince's right was perfect and entire, the two houses of parliament, as the organs of the nation, were alone qualified to pronounce when he ought to take possession of his right. In reply to this observation, Mr Pitt stated, that for any man to assert such a right in the Prince of Wales, otherwise than as it was voluntarily conferred upon him by the two houses of parliament, was little less than treason against the constitution; and that, except by their election, he had no more right, in point of principle, to assume the government, than any other subject in England. On the following day the opinion which had been stated by Mr Fox was attacked in the House of Lords by Lord Camden, and defended by Lord Loughborough and Lord Stormont. Ministers had now got an abstract question as a subject of debate, and they resolved not to lose sight of it, especially as their side of the question was likely to be

Reign of George III. most popular, from being founded on an assertion of the powers of parliament in opposition to hereditary right. Accordingly, when the subject was next mentioned, Mr Pitt said, that the question which had been started respecting the rights of parliament was of much greater magnitude and importance than those which related to the present exigency; and that it was impossible to dismiss the question of right without its being fully discussed and decided. And on the 16th of December, in a committee upon the state of the nation, he entered at large into the subject, and endeavoured to prove by ancient precedents that the powers vested in a regent had always been inferior to those of the king, and that parliament had interfered in cases of royal infancy in appointing councils of regency, nay even a single regent or protector; but he at the same time admitted that it would be expedient to intrust the government to the Prince of Wales, whatever limitations it might be thought necessary to impose on him. Mr Fox, on the contrary, contended that his doctrine was supported by the very nature of a hereditary monarchy. Upon Mr Pitt's principles, said he, if a man were questioned whether the monarchy is hereditary or not, the answer must be, I cannot tell; ask his majesty's physicians. When the king of England is in health the monarchy is hereditary, but when he is ill and incapable of exercising the sovereign authority, it is then elective. He ridiculed the absurdity of Mr Pitt's assertion, that the Prince of Wales had no more right than any subject of the realm, while he at the same time confessed that parliament was not at liberty to think of any other regent. But Mr Pitt's motion on the question of right was carried by a considerable majority.

On the 22d of December Mr Pitt proposed in the House of Commons, a resolution, the object of which was to declare it necessary, for the purpose of supplying the present deficiency, and maintaining entire the constitutional authority of the king, that the two houses should determine on the means by which the royal assent might be given to the bill which they might adopt for constituting a regency. The object of this proposition was obvious. Administration had resolved not to confide the regency to the Prince of Wales except under certain restrictions; but without the royal assent, an act of parliament, fixing these restrictions, could not be passed. They wished, therefore, to devise a solemnity which, in this case, might be held as equivalent to the royal assent; and Mr Pitt proposed, that the great seal should be affixed by the lord chancellor to the act of parliament, and that this should be held as equivalent to the royal assent. Mr Fox, on the contrary, urged an immediate address to the Prince of Wales, requesting him to take upon himself the regency; and upon the point long debates occurred in both houses of parliament, in which administration continued to be supported by the majority.

In the meanwhile Mr Pitt, in the name of the rest of the cabinet, explained to the Prince of Wales, in a letter, the restrictions which were meant to be inserted in the regency bill. These were, that the care of the king's person, and the disposal of his household, should be committed to the queen; and that the power to be exercised by the prince should not extend to the personal property of his father, nor to the granting of any office, reversion, or pension, except where the law absolutely required it, as in the case of the judges, for any other term than during the king's pleasure, nor to the conferring of any peerage, unless upon such persons of the royal issue as should have attained the age of twenty-one years. It was added, that these ideas were founded upon the supposition that the royal malady would only be temporary, and might be of short duration; that it was difficult to fix at present the precise period for which these provisions ought to endure; but that it would

hereafter be open to the wisdom of parliament to reconsider them whenever circumstances might appear to render it eligible. In his answer, which was dated on the second of January 1789, the prince declared, that it was with deep regret he perceived, in the propositions of administration, a project for introducing weakness, disorder, and insecurity, into every branch of public business; for dividing the royal family from each other; for separating the court from the state, and depriving government of its natural and accustomed support; for disconnecting the authority to command service from the power of animating it by reward; and for allotting to him all the invidious duties of the kingly station, without the means of softening them to the public by any one act of grace, favour, or benignity. He stated it as a principle of the British constitution, that the powers and prerogatives of the crown were held in trust for the benefit of the people, and were sacred as conducing to preserve that balance of the constitution which formed the best security for the liberty of the subject; and he objected to making trial in his person, of an experiment to ascertain with how small a portion of kingly power the executive government of the country could be conducted. He stated his conviction, that no event could be more repugnant to the feelings of his royal father on his recovery, than to know that the government of his son and representative had exhibited the sovereign power in a state of degradation and diminished energy, injurious in its practice to the prosperity of the people, and mischievous in its precedent to the security of the monarch and the rights of his family; but he nevertheless declared himself resolved to undertake, under every disadvantage, the office of regent, in order to avoid the evils which might arise from his following a different line of conduct.

The most singular part of this project for the government of the kingdom appears to have been that for confiding to the queen the power of removing, nominating, and appointing the officers of the royal household; assisted by a permanent council, to be selected by parliament, and to consist, in some measure, of the members of administration. The annual income of the royal household was computed at £300,000, and the number of officers of which it consisted amounted to four hundred; an influence which would certainly have been sufficiently formidable to a government in other respects restricted and limited. The lords of the bed-chamber had been made use of to defeat Mr Fox's India bill, and might, under a separate establishment, have proved embarrassing to the existing government. It is obvious, however, that, on this occasion, administration were encouraged in the pursuit of the plan which they had formed for restricting the prince's power, by the addresses presented to them from various parts of the kingdom, expressive of gratitude for the assertion by the House of Commons of their right of providing for the present deficiency.

On the 16th of January Mr Pitt proposed his regency bill, resting it, in some measure, upon the decisive opinion of Dr Willis, who expressed great hopes of the king's recovery; and after long debates, the limitations were sanctioned by a considerable majority. In the House of Lords similar debates occurred, but there also administration proved victorious. On the 31st of January Lord Camden moved in the House of Lords, that the lord chancellor should be directed, by authority of the two houses of parliament, to issue a commission in the name of the sovereign, for the purpose of immediately opening the session of parliament; and this resolution having been carried in both houses, the session was opened in the proposed form on the 3d of February. Though the principles of the regency bill had been previously discussed, yet its various clauses gave rise to new divisions; in which administration still maintained

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their superiority. The bill passed the House of Commons on the 12th of February, and was presented on the following day to the House of Lords, where it was discussed on the 17th and 18th, and a few unimportant amendments introduced into it.

But here the whole of these proceedings terminated. On the 12th of February, the king having been declared by his physicians to be in a state of progressive amendment, an adjournment of the House of Lords was therefore proposed on the 19th. On the 25th his majesty was declared by his physicians free from complaint; and on the 10th of March the lord chancellor, by the king's authority, addressed both houses of parliament in a speech, after which the ordinary business of the session commenced.

In the meanwhile the administration of Mr Pitt had been less fortunate in Ireland than in this country. The unexampled popularity which reconciled the people of Great Britain to all his measures, and the odium and suspicion which had fallen upon his opponents, had not hitherto been communicated to the neighbouring island. The prospect, therefore, of his departure from office excited little regret in that country, and its parliament made haste to worship what they accounted the rising sun. It had stood adjourned, previous to the royal incapacity, till the 20th January 1789; and the Marquis of Buckingham, then lord-licutenant, with consent of the privy council of Ireland, ventured to defer its meeting till the 5th of February. On the 11th of that month, two motions were offered to the consideration of the House of Commons, the one by Mr Grattan, the member most distinguished for his talents; and the other by Mr Conolly, the richest of the Irish commoners. By the first the royal incapacity was declared; and by the second it was proposed to present an address to the Prince of Wales, requesting him to take upon himself the government, with its various powers, jurisdictions, and prerogatives. After a long debate, the propositions of Mr Grattan and Mr Conolly were carried by a large majority; and on the following day an address to the Prince of Wales was also voted, and sent to the House of Lords, where it was adopted by a great majority. On the 19th of February the address was carried to the lord-licutenant, who, however, refused to transmit it to England; upon which the two houses appointed six commissioners to present the address immediately to the prince: but these measures had scarcely been carried through parliament when the king's recovery rendered them ineffectual, and the consequence was, that the majority of the Irish parliament, who were far from intending to engage in a contest with the British government, found themselves in an awkward situation.

The subject of the slave-trade, which had been brought under the consideration of parliament during the preceding session, was resumed upon the 12th of May. In the interval, petitions against the abolition of the traffic had been presented by persons in London, Liverpool, Bristol, and other places interested in the trade. Meanwhile, the report of the committee of the privy council, of which Mr Pitt had previously given notice, was presented to the House of Commons; and the enemies of the trade had been extremely active in endeavouring to excite the indignation of the public against this odious and inhuman traffic. Innumerable pamphlets were distributed, either gratuitously or at a low price, giving an account of the calamities endured by the unhappy natives of Africa; the wars in which petty princes were tempted to engage, with a view to sell their prisoners to European traders, were fully explained; the wretched manner in which these slaves were transported to the West India colonies, fettered and crowded together so as to occasion the destruction of multitudes by disease, was represented by prints, distributed along

with the popular publications upon the subject; and, lastly, instances were given of the cruelty of the masters in the West Indies, tending to render the white inhabitants extremely odious. By these means the public were led to interest themselves in procuring, if not an abolition of the state of slavery, at least a complete prohibition of the importation of additional slaves from Africa; and to this last object the attention of the legislature was now confined. The business was opened by Mr Wilberforce, who stated the effects of the trade upon Africa; noticed the mode of transportation, which he very fully described; adverted to the diseases contracted on ship-board, with the astringents and washes employed to hide the wounds of the miserable sufferers; descanted on the wickedness of the trade, which he felt to be so enormous and irremediable, that he could stop at nothing short of abolition; asserted that the number of negroes in the West Indies might be kept up without the introduction of recruits from Africa; and moved twelve propositions, stating the number of slaves annually carried from Africa, imported into the British West Indies, and entered in the custom-house accounts; the consequences produced upon the inhabitants of Africa; the injury sustained by the British seamen; the fatal circumstances which attended the transportation of the slaves; the causes of the mortality of the negroes, and a calculation of the relative increase of population in Jamaica and Barbadoes; together with a declaration that no considerable or permanent inconvenience would result from discontinuing further importation. Mr Pitt supported that side of the question which had received the sanction of popular approbation; declaring himself satisfied that no argument, compatible with any idea of justice, could be assigned for the continuation of the slave-trade; and expressing a hope, that while Great Britain took the lead of other countries in a matter of so great magnitude, foreign nations would be inclined to share the honour, and contented to unite with us in so excellent a work. Mr Fox highly approved of what had fallen from Mr Pitt, and declared that he had considered the trade in human flesh as so scandalous, that it was in the last degree infamous to suffer it to be openly carried on by the authority of the government of any country. Mr Burke was of opinion that, whatever might be the present situation of Africa, it could never be meliorated under the present system; that while we continued to purchase the natives, they must forever remain in a state of savage barbarity; that it was impossible to civilize a slave; and that there was no country situated like Africa into which the shadow of improvement had ever been introduced. On the other hand, Mr Wilberforce's propositions met with considerable opposition. Mr Savage and Mr Newnham, on the part of the city of London, asserted, that the measure, if carried into effect, would render the metropolis bankrupt; Mr Dempster thought that Mr Wilberforce's first proposal ought to be, to make good out of the public purse the losses which individuals would sustain from the abolition of the trade; Lord Penrhyn asserted, that as there were mortgages in the West India islands to the amount of seventy millions sterling, Mr Wilberforce's project would subject the country in the repayment of that sum; Mr Henniker opposed the abolition, on account of the alleged depravity of the Africans, which rendered them incapable of civilization; and Lord Maitland, Mr Marsham, Mr Hussey, Mr Rolle, Mr Drake, and Mr Alderman Watson, each alleged something intended to pass as a reason for entertaining similar views. Lastly, the matter ended in the renewal of Sir William Dolben's act to regulate, for a limited time, the mode of conveying slaves in British vessels from the coast of Africa.

The annual business of the budget was not brought for-

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ward this year till the 10th of June; and immediately previous to the discussion, the office of speaker of the House of Commons was vacated by the promotion of Mr Grenville to be one of his majesty's principal secretaries of state. On this occasion Mr Henry Addington, the personal friend of the premier, and son of Dr Stephen Addington, physician to Mr Pitt's family, was appointed to succeed Mr Grenville in the chair. His opponent was Sir Gilbert Elliot, who was proposed by the opposition; and both Mr Fox and Mr Burke animadverted on the youth and inexperience of his competitor; but on a division Mr Addington was elected by a large majority.

The expense incurred by the recent armament, the allowance to the American loyalists, and other circumstances, rendered it necessary to have recourse to a loan of one million, to defray the interest of which additional taxes were imposed upon newspapers, advertisements, cards, and dice, probates of wills, legacies to collateral relations, and carriages and horses. And as one of Mr Pitt's methods of extending the revenue consisted in endeavouring to suppress smuggling, and as he had formerly transferred the management of the duty on wine from the customs to the excise, he now pursued the same course in regard to the article tobacco. The subject was opened in the House of Commons on the 16th of June, when it was observed that tobacco had come to be considered as the staple of the smuggler, in the same manner as tea, wine, and spirits, had formerly been. The quantity of tobacco consumed in the kingdom had been found to bear a tolerably near proportion to the quantity of tea; and at least one half of this quantity was the exclusive commodity of the smuggler. The consumption amounted to fourteen millions of pounds; and the loss to the revenue upon the half of this consumption exceeded three hundred thousand pounds per annum. Under these circumstances, Mr Pitt thought it necessary to have recourse to the system of excise, by which the stock of the dealer was taxed, instead of the duty being collected on importation. A bill was accordingly introduced for effecting the transference proposed by the minister, and, after a good deal of discussion, passed by a large majority.

Mr Fox having annually brought forward a motion for the repeal of the shop-tax, which had proved extremely unpopular in the capital, Mr Pitt at length consented that it should be abolished. Mr Beaufoy again introduced a motion for the repeal of the corporation and test acts, which was supported by Mr Fox, opposed by Lord North and Mr Pitt, and rejected by a narrow majority. A bill introduced into the House of Lords by Earl Stanhope, for relieving members of the church of England from various penalties and disabilities under which they laboured, and for extending freedom in matters of religion to persons of all denominations, Catholics excepted, was equally unsuccessful. The laws it intended to repeal were those which imposed penalties upon persons who did not frequent the established worship; prohibiting men from speaking or writing in derogation of the doctrine of the book of common prayer; enjoining the eating of fish on certain days; authorizing the imprisonment of persons excommunicated; prohibiting the exportation of women; and declaring all persons who went to court, without having previously made a certain declaration, to be in the eye of the law Popish recusant convicts. But these absurd and obsolete enactments were stoutly defended by the episcopal bench; and he bill was ultimately rejected.

On the first of July the East India Company petitioned the House of Commons for permission to add a sum of one million to their capital; and the request was granted with little difficulty. On the same day Mr Dundas, as president of the board of control, brought forward a state-

ment of the revenues of India, which, after deducting every article of expenditure in that country, he calculated at L.1,820,000. During the present session, the trial of Mr Hastings still proceeded before the House of Lords. The third charge brought forward, respecting presents received by him during his government of Bengal, was opened by Mr Burke, who, in the course of his speech, alluded to the trial and execution of Nundcomar, and asserted that Mr Hastings had murdered that man by the hands of Sir Elijah Impey. But as the transaction respecting Nundcomar formed no specific part of the charges which had been preferred against Mr Hastings by the House of Commons, and as the question, in as far as Sir Elijah was implicated, had been examined and rejected during the preceding session, Mr Hastings presented a petition to the house, in which he entreated them, either to cause the additional allegations urged against him to be brought forward, and prosecuted in specific articles, or to afford him such other redress as they might judge suitable and proper. Mr Pitt supported the petition, upon the ground that the murder of Nundcomar formed no part of the crime of peculation, and every rule of evidence was against its being alleged; that it had been charged in order to discredit the character of the accused, although it was a rule in the courts of law that no fact could be given in evidence to discredit even a witness; that if the murder of Nundcomar was not admissible as evidence, it could only be urged as matter of aggravation, which it was impossible to allow; and that the common sense of the house, and of all mankind, would not permit the crime of murder to be urged as an aggravation of the crime of peculation. Mr Fox, on the contrary, cited the case of a captain of a ship, against whom murder was charged in having thrown his cargo of slaves overboard, in order to prove that he had by sinister means endeavoured to defraud the underwriters of the amount of the insurance; and maintained that the present case exactly corresponded to this. It was impossible to describe the corrupt transactions of Mr Hastings without alluding to the crimes which had accompanied them, or to relate the crimes without mentioning the names of the persons by whom they had been committed. A resolution, however, was moved and carried, by which it was declared, that no authority had been given by the House of Commons for making any allegation against Mr Hastings respecting the death of Nundcomar, and that the words of Mr Burke, complained of in the petition, ought not to have been spoken.

The session of parliament was terminated on the 11th of August, by a speech from the lord chancellor in the name of the king. The summer passed away without producing any memorable event, and parliament assembled again on the 1st of January 1790, when they were met by the king in person, who, in the speech from the throne, observed that he continued to receive assurances of a pacific nature from the different powers in Europe, and at the same time congratulated the nation on the happiness it enjoyed, from the increasing advantages of peace.

CHAP. XV.

REIGN OF GEORGE III.—FRENCH REVOLUTION.

Origin of the French Revolution.—Allusions thereto in the House of Commons.—Approved of, in the first instance, by Mr Pitt.—Hostility of Mr Burke.—Revolution defended by Mr Fox and Mr Sheridan.—Conduct of Mr Pitt.—Motion for repeal of the Corporation and Test Acts.—Mr Flood's motion for a Reform in Parliament.—Affair of Nootka Sound.—Disturbances in the Austrian Netherlands.—New Parliament.—Schism amongst the members of Opposition.—Burke and Paine on the French Revolution.—Desertion of the Opposition by Mr Burke.—Slave-

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trade and Sierra Leone Company.—Dispute about Oczakow.—General state of Europe.—Catholic Relief Bill.—War in India.—Early popularity of the French Revolution.—Riots at Birmingham.—State of Europe.—Project for the partition of Poland and France.—Treaty of Pilnitz.—Parliamentary proceedings.—Project for the gradual abolition of the Slave-trade.—Scotch Burgh Reform.—War in India.—Siege of Seringapatam.—Treaty of Peace with Tippoo.—Causes of the impending changes in Europe.—Royal Family of France.—Defects of the new French Constitution.—Society of Friends of the People.—Debate on Mr Grey's notice of a motion for Reform in Parliament.—Paine's Rights of Man.—Proclamation against Seditious Publications.—Its effects.—France menaced with invasion.—Russians invade Poland.—Duke of Brunswick's Manifesto.—Its effects.—The Prussians enter France.—Defeated at Valmy.—Retreat.—Battle of Jemmapes.—Proceedings of the French Government.—Ferment in Britain.—Political Associations.—Friends of the People.—Constitutional and Corresponding Societies.—Meeting of Parliament.—Speech from the Throne.—Debate on the Address.—Desertion from the ranks of Opposition.—Mr Fox's motion to treat with France.—The Alien Bill.—Correspondence between Lord Grenville and M. Chauvelin.—The King's message announcing War.—Attempt by the French to re-open negotiations.—Declaration of War.

During the preceding summer the eventful career of the French revolution had commenced. The extreme weakness into which the government of France had fallen, owing to the pressure of the public debts, and the embarrassment of the finances, had induced the king to call together the states general of the kingdom, which soon assumed the title of the national assembly. Their debates, which were held in public, diffused a love of innovation, and a desire to reform their ancient government, and establish a free constitution. The court became alarmed by the violence of their proceedings, and attempted to set bounds to their projects; but the populace of the capital rose in arms, and the military refused to act against them. Meanwhile the national assembly proceeded daily in the discussion of new plans of change. They seized the ecclesiastical property and tithes, resolving to limit the clergy for the future to fixed salaries; they put an end to the monastic institutions; they abolished the whole order of nobility, and limited the power of the crown. These, and other proceedings, which will be stated in their proper place, excited much attention in Britain; and accordingly allusions to them became not unfrequent in parliament during the present session; indeed general questions were debated with more animation, and excited a higher degree of interest, than they had for many years done.

The supplies for the navy and army, which were stated at the same amount as in the preceding session, produced some animadversions from Mr Marsham and Mr Pulteney, who alleged that, in the actual state of Europe, the military establishment of Britain might safely be reduced. Mr Fox observed, that if ever there was a moment in which he could be less jealous than at another of an increase of the standing army, the present was that moment. The example of a neighbouring nation had proved that the former imputations upon standing armies were entirely unfounded and calumnious; and it was now universally known throughout all Europe, that a man by becoming a soldier did not cease to be a citizen. He thought the new form which the government of France was about to assume, would render her a better neighbour than when her affairs were controlled by the intrigues of ambitious and interested statesmen. Mr Pitt acknowledged that the tumultuous situation of France afforded a prospect of tranquillity; but he thought that the opportunity ought to be seized to raise our army to such a state of respectability as would leave no hopes of future hostility. The present convulsions of France must sooner or later terminate in the re-establishment of order; but there was a probability, that while the fortunate arrangements of such a situation

might render her more formidable, they would also convert her into a less restless neighbour. As an Englishman and as a man, he wished for the restoration of tranquillity in France, though that event appeared to him considerably distant. Whenever it arrived, and her inhabitants became truly free, they must be in possession of a freedom resulting from order and good government, and they would then stand forward as one of the most brilliant powers in Europe; nor could he regard with envious eyes an approximation towards those sentiments which were characteristic of every true British subject. But while Mr Pitt, who had commenced his public career as the champion of political reform, and still on important occasions represented himself as preserving his attachment to popular rights, was thus applauding the first revolutionary movements of the French, his friends considered themselves as at perfect liberty to give utterance to sentiments of a very different nature upon the subject. Viscount Valletort, who moved the address, expressed great compassion for the king of France, then almost a prisoner in his own palace, and for the families of distinction who had found it necessary to fly to foreign countries to avoid the unexampled barbarities which were committed with impunity at home; and Colonel Phipps declared that the praise bestowed by Mr Fox upon the conduct of the French military, was a poor compliment to the profession in general, and that, if he had wanted a subject for panegyric, he ought rather to have adverted to the conduct of the English army during the riots of 1780, when they were not led by false feelings to put themselves at the head of schemes leading to anarchy and cruelty.

On the 9th of February, when the vote of supply for the army came a second time under consideration, Mr Burke revived the subject of the French revolution. He declared himself, in decided terms, an enemy to the measures which had lately taken place in that country; and conceived that it would be the greatest of all calamities for Britain, if any set of men amongst us should represent the late transactions in France as fit objects of imitation. He, however, condemned the greatness of our military establishment, by reason of the weakness of France; and declared, that on looking over the geography of this part of the world, he saw a great gap, a vast blank, the space hitherto occupied by France, which had no longer any political existence. France had at different periods been as dangerous to us by her example as by her hostility. In the last age, we had been in danger of being entangled, by her example, in the net of a relentless despotism. Our present danger, from the example of a people whose character knew no medium, was that of being led, through an admiration of successful fraud and violence, to imitate the excesses of an irrational, unprincipled, proscribing, confiscating, plundering, ferocious, bloody, and tyrannical democracy. They had a good political constitution the day their states general assembled in separate orders; but this they had destroyed. They had now no other system than a determination to destroy all order, subvert all arrangement, and reduce every description of men to one level. It was absurd to compare a proceeding like this to the revolution in England, which neither impaired the monarchy nor the church, and merely drove away a legal monarch, who was attempting arbitrary power.

Mr Fox expressed great concern at differing in opinion from Mr Burke, for whom he avowed the highest reverence and esteem. He repeated his former opinion upon the subject of French affairs, but declared himself an enemy of all absolute forms of government, whether monarchical, aristocratical, or democratical. Mr Sheridan in more unqualified terms stated his disapprobation of Mr Burke's sentiments, expressed his surprise that any man

who valued the British government should feel such abhorrence of the patriotic proceedings in France, and declared himself as ready as Mr Burke to detest the cruelties which had been committed. He complimented individually the Marquis de Lafayette, M. Bailli, and other French patriots, and expressed a hope that the despotism of France would never be restored; but observed that he ought not on that account to be considered as approving of a wanton persecution of the nobility, or an insult to royalty. Mr Burke answered Mr Sheridan with indignation, and denied that he was the advocate of despotism; but declared that Mr Sheridan had sacrificed his friendship for the applause of clubs and associations.

It is probable that Mr Pitt had now become aware of the difficulty of his situation with regard to the French revolution, which at this period was generally regarded with approbation in Britain, as an imitation of that spirit by which our ancestors had raised their country to a state of unexampled prosperity and happiness. Mr Pitt must already have known that the court regarded it in a very different light; and that, at no distant period, his ambition and his love of popularity might become incompatible. On the present occasion he undoubtedly saw with satisfaction a division likely to occur among those who had hitherto been his competitors for popularity; and with that dexterity in debate for which he appears to have been remarkable, he instantly endeavoured to widen the breach, and to attach to himself a man of so much intellectual power as Mr Burke, declaring that he agreed with the latter in almost every thing he had urged respecting the late commotions in France; that the sentiments Mr Burke had professed respecting the British constitution filled him with the sincerest satisfaction; and that the manner in which he had pledged himself to maintain it for ever inviolate, entitled him to the gratitude of his fellow-citizens and the admiration of posterity.

A new effort was made on the 2d of March to procure a repeal of the corporation and test acts. The dissenters had prevailed with Mr Fox to introduce the motion; but the clergy of the church of England, alarmed no doubt at the downfall of the ecclesiastical establishment in France, were anxious to diffuse a spirit of opposition to the intended attack. Mr Fox represented his whole argument as resting upon this principle, that no government has a right to animadvert upon the speculative opinions of its subjects, till these opinions produce a conduct subversive of the public tranquillity. It had been remarked that certain errors in religion tended to disturb the public tranquillity; but surely political errors must have this tendency in a much greater degree; yet such was the absurdity of the test laws, that a man who favoured arbitrary power in his sentiments, who considered the abolition of trial by jury as no violation of liberty, and the invasion of the freedom and law of parliament as no infraction of the constitution, might easily pave his way to the first situations in the state. Mr Pitt, as usual, supported the privileges of the established church; asserting, that though opinions might not be a warrantable ground for criminal accusation, yet they might afford a good reason for excluding particular individuals from the public service; and that to discover dangerous opinions a test might be highly expedient. Mr Burke was decidedly hostile to the measure. Mr Fox had stated the principles of toleration and persecution, but abstract principles he always disliked. Of all abstract principles, however, those of natural right, upon which dissenters rested as their stronghold, were the most idle and the most dangerous; they superseded society, and snapped asunder all those bonds which had for ages constituted the happiness of mankind. He adjured the house not to suffer the fatal incidents which had attend-

ed the church of France, plundered and demolished in so disgraceful a manner, to abate their zeal in favour of our present happy and excellent establishment. Mr Fox in reply declared himself filled with grief and shame at the sentiment which Mr Burke had avowed, and asserted that all the principles he had stated had formerly received the sanction of his friend. He thought Mr Burke at present misled by his sensibility; his feelings had been shocked and irritated by a mistaken idea of the transactions in France, which were in reality nothing more than the calamities to which every country was unavoidably subject at the period of a revolution in its government, however beneficial and salutary. The proposed repeal was of course rejected on a division.

A few days afterwards Mr Flood brought forward a motion for the reform of the representation of the people in parliament, and proposed to add a hundred members to the House of Commons, to be elected by the resident householders in every county. Mr Windham opposed the motion, on the ground that the country had prospered under the representation as it stood, and because innovations had become extremely dangerous. Where, said he, is the man who would repair his house in the hurricane season? Mr Fox, on the contrary, declared himself as much persuaded as ever of the necessity of reform; but he thought the majority of the nation of a different opinion, and was therefore of opinion that the motion ought to be withdrawn. Mr Pitt considered the proposal as brought forward at an improper time, and said he wished to wait for a more seasonable opportunity, when he would certainly again submit his ideas upon the subject to the consideration of the house. Mr Flood accordingly withdrew his proposition.

On the 5th of May a message from the king informed both houses of parliament of certain acts of hostility committed by the Spaniards in the seizure of three British vessels which had attempted to establish a foreign trade between China and Nootka Sound, on the west coast of North America. The Spaniards conceiving the whole of that part of the American coast to be their property, were the first to give information of what they had done, and required that steps should be taken by the British government to prevent future encroachments upon that coast. The British navy was instantly augmented; and as a war with Spain, unassisted by France, could not prove very formidable, the public seemed to regard the approach of hostilities with little concern. But the determination evinced induced the Spaniards to come to an accommodation, and the dispute ended without an appeal to arms. During the present session little progress was made in the trial of Mr Hastings; and both parties accused each other as the authors of the delay that had taken place, while the subject began to be neglected or forgotten by the public. On the 10th of June the king put an end to the session by a speech from the throne, and this parliament was dissolved.

At this period the Austrian Netherlands were in a state of great agitation. The people of these provinces had long been governed by a feudal constitution, which vested important privileges in the clergy, the nobles, and certain classes of citizens, but more especially in the clergy. Joseph II. had invaded these privileges, seized upon the greater part of the property belonging to the monasteries, and driven from the country all who opposed his innovations. At length, about the end of the year 1789, the exiles having united on the frontiers, entered the country, and being joined by others, formed a considerable army, which rapidly overran the whole of Austrian Flanders; while the emperor, engaged in a war with the Turks, was prevented from sending any considerable force against

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them. In December, the states of Barbant having assembled, appointed an administration, at the head of which was Henry Vander Noot, a popular advocate; and in January 1790 were formed the outlines of a federal constitution, by which each of the Belgic provinces was to retain its peculiar constitution, whilst the general defence of the republic was to be intrusted to a congress. Meanwhile a considerable number of foreigners entered into the service of this new republic. But it soon appeared that the Belgic revolution would produce no lasting effects. The old aristocratical government, uncontrolled by the authority of a prince, was everywhere adopted; the power of the clergy was even increased; the very first step of the Belgian congress was a public declaration of religious intolerance; and the liberty of the press was prohibited, and state licensers appointed. The consequence was, that discontents speedily arose. But at this period the emperor Joseph died, and was succeeded by Leopold, archduke of Tuscany, who issued a proclamation, inviting the revolted provinces to return to their allegiance, and promising to restore their ancient political constitutions. And not trusting to peaceful measures alone, he sent an army against the insurgents, and at the end of the year the house of Austria had recovered its authority in the Netherlands.

The new parliament assembled on the 25th of November 1790. As no uncommon efforts had taken place at the preceding elections, nearly the same members as formerly were returned to the House of Commons; and Mr Addington was chosen speaker. On the following day the session was opened by a speech from the throne, in which his majesty informed parliament that the differences which had arisen with the court of Spain were brought to an amicable termination; that a separate peace had been concluded between Russia and Sweden; that, in conjunction with his allies, he had employed his mediation to negotiate a treaty between Russia and the Porte; that he was endeavouring to assist in putting an end to the dissensions in the Netherlands; but that the peace of India had been interrupted by a war with Tippoo Sultan, son of the late Hyder Ali. The speech concluded with recommending to parliament a particular attention to the state of the province of Canada. Various debates, of little importance in a historical point of view, occurred respecting the negotiations with Spain, the fur trade at Nootka Sound, and the expensive naval armament which had been fitted out to enforce the claims of Britain.

But in the beginning of March 1791 a bill was brought into parliament by Mr Pitt for regulating the government of the province of Canada in North America. This circumstance is chiefly worthy of notice on account of an altercation to which it gave rise between Mr Burke and Mr Fox. During the last session of the former parliament Mr Burke had declared his disapprobation of the French revolution, whilst Mr Sheridan and Mr Fox had expressed very opposite sentiments. Mr Pitt, as we have already seen, had dexterously laid hold of the opportunity to excite disunion among his antagonists, and had declared himself highly satisfied with Mr Burke's attachment to the British constitution. Mr Burke, on the other hand, had long been engaged in a career of fruitless opposition to the existing government; and during the king's illness, in the end of the year 1788, he had indicated such an indecent impatience when any expectation was expressed of his majesty's speedy recovery, as sufficiently demonstrated how eager he was to obtain possession of office. It is not improbable, therefore, that the approbation expressed by Mr Pitt, of his fears on account of the French revolution, suggested a decisive opposition to that great national movement, as a mode of ingratiating himself with administration; and that this idea, concurring with his former

sentiments, stimulated his eager mind to devote his principal attention to the subject. Accordingly, in November 1790, he published a treatise, in which he endeavoured to vilify the French national assembly, and to hold out the revolution as a subject of alarm and of detestation to all Europe. The style of copious and popular eloquence in which the book was written, together with the sentiments which it contained, produced a great impression; and replies to it were published by Dr Priestley and others; but that which proved most successful in gaining the attention of the public, was the production of Thomas Paine, who had formerly published in North America a pamphlet entitled *Common Sense*, which proved extremely prejudicial to the royal cause throughout the colonies. His present work contained a statement of the facts connected with the French revolution, together with satirical strictures upon what he accounted imperfections in the British constitution. He was not equal to his antagonist in copiousness of diction; but in shrewdness of remark and concise effective energy of style he was superior. Mr Burke's love of literary fame was great; and it had been highly gratified by the attention which his book had attracted, particularly among the higher orders. Hence, when he saw his reputation rudely assailed, his temper became ruffled; and he appears to have wished for an opportunity of separating himself from his former political associates. Accordingly, on the 6th of May, when the clauses of the Quebec bill were about to be discussed in a committee of the whole house, he rose, as he said, to speak to the general principle of the bill, and enlarged upon the importance of the act which they were about to perform, namely, that of appointing a legislature for a distant people. But he thought the first consideration ought to be the competency of the house to such an act. By what were called the "rights of man," a body of principles lately imported from France, all men are by nature free, and equal in respect to rights. If such a code were admitted, the power of the British legislature could extend no further than to call together the inhabitants of Canada to choose a constitution for themselves. But, rejecting this code, which was never preached without mischief, he assumed the principle, that Britain had acquired the right of legislating for Canada by conquest. The next question was, what model was to be followed in instituting a government for Canada; whether that of America, of France, or of Great Britain, which were the three great modern examples. In discussing this point, he diverged from the subject more immediately before the house, and took an opportunity to pronounce a vehement invective against the principles and enactments adopted by the French national assembly, in attempting to form a new constitution. He was called to order by some of his former friends, and an altercation ensued, in the course of which he asserted that a design had been formed by certain persons in this country against the constitution. Mr Fox accused Mr Burke of leaving the question before the house to seek a difference with him, and to fortify misrepresentations of something which he had said in a former debate concerning the French revolution; and he adhered to his former sentiments in approving the revolution, though not the new constitution of France. Mr Burke repeated his attack upon the French revolution, and declared that his friendship with Mr Fox was dissolved by that accursed event. Mr Fox, with much apparent agitation, endeavoured to soften the asperity of Mr Burke, but without effect. He had evidently resolved upon the part he was to act; and this may be considered as the first occasion upon which any member of the British legislature represented his own conduct as seriously influenced, to the extent of deserting his former political views and associates, in consequence

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During the session, the question of the slave-trade was again brought forward by Mr Wilberforce, and was supported by Mr Pitt and Mr Fox; but his motion was nevertheless negatived by a considerable majority. The zeal of the nation in favour of abolition had however become very great; and as the evidence led before the House of Commons had represented the trade as the source of innumerable crimes and great misery, a company was established with the view of civilizing the natives of Africa, and of cultivating, by the hands of freemen, West India productions in that country; and having received a charter, they fixed on Sierra Leone as their principal settlement, and great expectations were entertained of the success of the project; expectations destined never to be realized.

On the 28th of March a message from his majesty announced that his endeavours to effect a pacification between Russia and the Turks having proved unsuccessful, he had judged it necessary to add weight to his representations, by making some further augmentation of his naval force. The point in dispute related to Oczakow, a town situated upon the Black Sea, at the mouth of the river Dnieper, which had been taken from the Turks, and was considered by Russia as a situation of great importance with reference to future operations against the Ottoman empire. The Turks, greatly exhausted by the contest, were reduced to the necessity of purchasing tranquillity at almost any price; but Prussia, alarmed at the growing power of Russia, had, in conjunction with Britain and Holland, offered to mediate a peace, with a view to procure the restoration of Oczakow to its former masters. Russia, however, refused the offered mediation, and also declined to renew any commercial treaty with Britain; though she had concluded one with France and another with Spain, and even entered into a quadruple alliance with these countries and with Austria, for the purpose of restraining the influence of Prussia, Britain, and Holland. In moving an address to his majesty on this message, Mr Pitt observed, that having entered into defensive alliances, which were admitted to be wise and politic, we ought to adhere to them; that Prussia was our ally, and any event calculated to affect that power, and diminish its influence on the Continent, would be injurious to us, as far as our mutual interests were concerned; and that the progress of the Russian arms against the Porte gave sufficient cause for alarm, since, if the power of the Porte were further humbled by its aspiring rival, Prussia would instantly feel it, and not Prussia alone, but all Europe. Mr Fox, on the contrary, expressed his conviction that Prussia could not be endangered by the progress of the Russian arms in Turkey, and that an alliance with Russia appeared to him the most natural and advantageous which we could possibly form. The address, however, was carried by a large majority. But the opposition, finding that they were supported by greater numbers than usual, and that a war with Russia was unpopular, brought the question repeatedly forward; and administration, perceiving the current of public opinion to run against them, abandoned their views, and refused to support Prussia in attempting to set bounds to the ambition of Russia.

On considering the state of Europe at the time, administration were probably guided, in their jealousy of Russia, by the maxims which had influenced the politics of Great Britain during the best periods of its history. The Spanish monarchy had long been in a state of debility, which rendered it of little weight or importance on the continent of Europe; and France had likewise suffered her armies to decline, and, by a sort of family compact,

had fallen under the influence of Austria; whilst the revolution, or rather the weakness which preceded it, had incapacitated her for interfering in foreign affairs. In the mean time Austria and Russia, relinquishing all rivalry, had entered into a close combination, and acted in subserviency to their mutual ambition. Hence, to preserve some tolerable balance of power on the continent of Europe against these two great military empires, it became absolutely necessary for Great Britain and Holland to unite with Prussia and Sweden, and to protect the Turks, in order to prevent the further aggrandisement of these two great and warlike powers. The British ministry, however, finding a war with Russia likely to prove unpopular, consented that Great Britain should descend from her proud station of holding the balance of the Continent; and the consequences of this desertion speedily appeared; for Prussia, no longer backed by Britain, was under the necessity of joining Russia and Austria in their schemes of aggrandisement at the expense of the weaker powers, that she might strengthen herself by a share of the spoil, and maintain her position in relation to these powers. How far the British administration acted culpably in deserting what they accounted their duty, in compliance with the apparent wish of the nation, is a question which was never discussed, because the consequences of their conduct were soon overlooked and forgotten amidst the great events which speedily occurred. From the love of popularity, and the habit of resisting all the projects of administration, opposition at this time encouraged the pusillanimity of their countrymen; whilst the members of administration, fearful of losing their places, suffered their country to be degraded from its proper rank and influence in Europe, and prepared the way for the partition of Poland, the projected partition of France, the war of the revolution by which that project was resisted, and the immeasurable aggrandisement of the power which soon proved so dangerous to Britain and to all Europe.

An unsuccessful effort was made during this session of parliament by Sir Gilbert Elliot, to procure for the members of the church of Scotland an exemption from the test act. But the Roman Catholics in England were more fortunate in obtaining relief from certain penal statutes. As the Catholic church was the great object both of political and religious terror in the first stages of the reformation, the English statute book was loaded with the most rigorous edicts against the professors of that obnoxious faith; and though some of these were removed in the year 1780, yet in 1791 not less than seventy pages of Burn's Ecclesiastical Law were occupied with the enumeration of the penal statutes in force against the Roman Catholics. Amongst these were some of the most sanguinary nature. For example, it was high treason and death to make a convert to the Catholic faith; and severe penalties were enacted against papists for hearing mass by some statutes, whilst by others they were compelled to attend the established worship, however contrary to their consciences. A reform was therefore imperiously called for, and had become the more reasonable, as, in the year 1790, a body of Catholic dissenters had formally protested against the temporal power of the pope, and against his assumed authority to release men from their civil obligations, or to dispense with the sacredness of oaths. Mr Milford, therefore, brought forward a bill to relieve the protesting Catholics from the penalties and disabilities to which persons professing the Romish religion were subject by law; and the bill passed unanimously, excepting that Mr Fox wished to extend it, not merely to protesting, but to all Roman Catholics; upon the principle, that the state has no right to inquire into the opinions, either political or religious, of the people, but only to take cognizance of their actions.

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The war now carrying on in India gave rise to some debates during the present session. Like all other wars in that quarter of the globe, it had been undertaken on our part for the purpose of aggrandisement, and on the part of our antagonist from a jealousy of the British power. The ostensible cause of the war, however, was, that the Dutch had long been in possession of two forts upon the frontier of Hyder Ali's kingdom of Mysore; that in the year 1780 Hyder had seized and garrisoned these forts, under the pretence that they belonged to a vassal of his; that having speedily thereafter induced the Dutch and French to join him against the British, the forts were given up to the Dutch; that in 1789, Tippoo had again claimed the forts; and that the Dutch, dreading his power, had sold the forts to the rajah of Travancore, a vassal or ally of the British. Tippoo, resenting this mode of evading his claim, made war upon Travancore; but as the rajah had effected the purchase under secret instructions from the British government in India, he was defended by them. Thus the war was said on our part to have been entered into in defence of the just rights of our ally, the rajah of Travancore; whilst on the other hand it was contended that this was nothing more than an attempt to subdue the sovereign of Mysore, and extend our eastern empire, at a time when the power of France was annihilated, and our own forces in great strength in that quarter. In the trial of Mr Hastings little progress was made during the present session. As parliament had been dissolved during the dependence of the trial, a question occurred, whether that circumstance did not put an end to the impeachment. The friends of Mr Hastings adopted the affirmative side of the question, and were supported by Mr Erskine and the attorney and solicitor general, Macdonald and Scott; whilst Mr Pitt, Mr Burke, and Mr Fox contended that a dissolution could have no effect upon an impeachment. After much discussion, it was carried in the House of Commons that the impeachment was still depending, and the same decision was adopted by the House of Lords. The session of parliament was concluded on the 10th of June.

As the avowed object of the first leaders of the revolution in France was the establishment of a system of political freedom, or of a representative government, with a hereditary monarch at its head; and as one of the consequences which they expected to follow from the establishment of the new system was the complete abolition of wars, which they ascribed entirely to the ambition of kings; the progress of the revolution was regarded with much favour by many persons in Great Britain. The reform of the Gallican church, though it alarmed the English clergy, was favourably regarded by the English dissenters; and the abolition of titles of honour was not disliked in a country where they are only enjoyed by a few individuals, and are chiefly valued on account of the privilege of hereditary legislation by which they are accompanied. The English also had long been accustomed to boast of their political freedom, and of their superiority in this respect over their French neighbours; and hence, when the populace of Paris rose in arms, when the military refused to act against them, and when the state prison or fortress of the Bastille was taken and demolished, many persons in Great Britain regarded as an imitation of the efforts of our ancestors the attempts made by the French to shake off the ancient despotism, and to renovate the order of society. The public at large indeed had not yet given much attention to the subject; but of the speculative and enthusiastic there was a sufficient number to form numerous convivial parties in commemoration of the 14th of July, the day on which the Bastille had been taken. These meetings, it is true, were on the whole regarded

rather unfavourably by persons attached to the monarchical part of our constitution; but no public expression of disapprobation had hitherto appeared.

A festive meeting of this nature was to have been held at Birmingham on the 14th of July 1791; but several days preceding it, some unknown person had left in a public-house copies of an inflammatory handbill, representing the late transactions in France as proper to be imitated in England. The contents of this placard were very generally circulated, and produced much conversation in the town; upon which the magistrates offered a reward of a hundred guineas for discovering the author, printer, or publisher. Meanwhile the friends of the intended meeting disclaimed in the strongest terms the sentiments expressed in the seditious handbill; and finding their views misrepresented, they at first resolved that the meeting should not take place; but another determination was afterwards adopted, and the company assembled to the number of eighty. The party, however, had scarcely met when the house was surrounded by a tumultuous rabble, who expressed their disapprobation by hisses and groans, and by shouting "church and king." Upon this the meeting immediately dispersed. But in the evening the mob attacked and burned a Unitarian meeting-house belonging to the congregation of Dr Priestley; and although this distinguished person had not been present at the meeting, his house, from which he was compelled to fly with his family, was also attacked, and his library, his valuable philosophical apparatus, and his manuscripts and papers, were destroyed. During the three succeeding days they destroyed some other meeting-houses, together with the dwelling-houses of several eminent dissenters in the neighbourhood; and it was not till the night of the fourth day that some parties of light dragoons arrived. The damage done was very great; and the magistrates were accused of at first favouring and encouraging the mob, whose excesses they afterwards found it impossible to restrain. Five of the rioters were tried at Worcester, and one was convicted and executed. At Warwick twelve were tried, and four convicted of burning and destroying houses, three of whom were executed, and one was relieved upon the application of the magistrates, as it appeared that his interference in the riot had been accidental.

At this time a foundation was laid on the Continent for the most important political changes. The various nations of Europe had for some centuries owed their independence to the jealousies which they mutually entertained. Many petty states were altogether unable to contend in war against their powerful neighbours; but they owed their safety to the circumstance of their neighbours being held in check by other great powers, who resisted all attempts at aggrandisement. When one nation became dangerous by its ambition, the combination of a number of other states repressed its machinations; and thus the Spanish, and afterwards the French monarchies, were restrained within due bounds. But in the course of the century the power of Russia had become formidable in Europe; and its rulers sought rather to undermine than to overthrow that balance of strength to which the lesser states of Europe had owed their safety. A former Russian sovereign had entered into a close alliance with the head of the house of Austria; and, notwithstanding the talents of the great Frederick, this union had nearly proved fatal to the Prussian monarchy. Finding the advantage of such an alliance, the house of Austria attempted at the same time to attach itself to France, its ancient hereditary enemy, by the marriage of the archduchess Marie Antoinette to the dauphin, afterwards Louis XVI.; and this marriage fully produced all its intended political effects. The French court, relinquishing its former policy of humbling

Reign of George III. Austria, suffered its armies to fall into decay, and allowed itself to be led on all occasions by this more active power; and the revolution, which wrought so radical a change in the government of the nation and the order of society, by subverting every existing establishment, and exciting jealousy and discontent in every quarter, reduced the nation, in the eyes of foreign powers, to a state of utter debility. The king and royal family, exposed to endless insults and humiliations, had been compelled to submit to a new constitution, which placed the royal authority on a very precarious footing; the principal nobility had emigrated, and the king himself had attempted to follow their example; but being seized at Varennes, he was brought back as a fugitive, and placed at the head of a form of government which he had neither the power nor the inclination to administer.

In this state of affairs Russia and Austria, acting in conjunction, saw nothing to resist their ambition. They had recently wished to seize upon and divide the richest provinces of Turkey; but the Austrians having met with unexpected resistance, desisted from the attempt. The Russians however were more successful. The king of Prussia, with the aid of Britain and Holland, had attempted to restrain their progress; but being deserted by Britain, he now found it necessary to keep on fair terms both with Russia and Austria; and for this purpose, as well as to avoid being left behind in the career of usurpation and aggrandisement, he was compelled to enter into all their ambitious schemes. Poland and France were at this time two of the weakest states in Europe. For the sake of erecting a barrier to his own states, the Prussian monarch had encouraged the king and the leading nobles to form a new political constitution for Poland, by which its government might be strengthened; but Russia and Austria had cast their eyes upon this country, with a view, in imitation of what had been done in 1772, of seizing its best provinces; and the king of Prussia now found it necessary to acquiesce in the project. And the state of France at this period held out strong temptations for the formation of a similar project respecting it. Leopold, emperor of Germany, had a fair excuse for interfering in French affairs, namely, to rescue the king from the state of thralldom to which he had been reduced by his subjects; and the other princes of Europe had become alarmed at the example set by France, of limiting the authority of the monarch, of destroying the privileges of the nobility, and of reducing to a level all classes of persons in the state. The united powers of the north, therefore, now resolved to restore the French king and his nobles, but at the same time determined to divide among themselves and their allies some of the provinces of France. Towards the close of the summer 1791 these points were adjusted, at a conference held at Pillnitz in Saxony, between the emperor Leopold and the king of Prussia. The treaty entered into was intended to be kept secret; but the substance of it soon transpired, and afterwards, by the hatred which it excited in the French nation, proved the cause of important events. Its general object is understood to have been the dismemberment of Poland, and also of part of France. Poland was to be divided among the three great military powers in different portions. With regard to France, the emperor was to obtain Bavaria in exchange for the French Netherlands, which he was to conquer, and transfer, along with the Austrian Netherlands, to the elector of Bavaria. The Archduke Charles was to obtain the duchy of Lorraine; Strasburg and Alsace were to be restored to the empire; the king of Sardinia was to receive Dauphiné, if he acceded to the coalition; Spain, on the same condition, was to be accommodated with the French portion of the island of St Domingo, with Corsica, Rousillon, and Bearn; and

the Swiss cantons, if they became parties to the coalition, were likewise to receive certain territories. This treaty was publicly disavowed; but it was nevertheless universally believed throughout Europe to have been entered into, and was accordingly talked of under the appellation of the "Concert of Princes."

Parliament assembled on the 31st of January 1792, and a variety of uninteresting debates occurred, the principal of which related to the armament which had been fitted out on account of the dispute with Russia concerning the fortress of Oczakow. During the preceding autumn, the Duke of York, second son of the king, had married a daughter of the king of Prussia. This prince was believed to be a favourite son; and as the marriage in question had been contracted, not from political considerations, but the private choice of the parties, it gave general satisfaction. A provision of L.37,000 per annum was readily made by parliament for the royal pair. On the 17th of February Mr Pitt brought forward a statement of the public revenue, from which it appeared that nearly half a million might be applied towards the extinction of taxes, or the payment of the national debt; and this was accordingly done; the additional tax recently laid on malt, the taxes on female servants, on carts and waggons, and on houses under seven windows, and part of the duty on candles, being those repealed. On the 2d of April the question of the slave-trade was again brought under the consideration of the House of Commons by Mr Wilberforce. He disclaimed any project of emancipating the negroes, but contended that, by the abolition of the importation of new slaves, the state of those in the West Indies would be improved. The slave-trade was defended on this occasion by Colonel Tarleton and Mr Jenkinson; while Mr Wilberforce was supported by Mr Montague, Mr Whitbread, and Mr Milbank. Mr Dundas professed himself a friend to the abolition, but entertained doubts with respect to the mode of effecting it. Mr Addington agreed in opinion with Mr Dundas. He thought the trade ought to exist for some years longer, and therefore could not vote for an immediate abolition. Mr Fox deprecated every kind of deception or delusion practised upon the country, and reprobated in strong terms Mr Addington's views of the subject. Mr Dundas moved, as an amendment to Mr Wilberforce's motion, that the trade should be abolished gradually; and although Mr Pitt declared his disapprobation of the amendment, the motion for a gradual abolition was carried by a considerable majority. Soon afterwards Mr Dundas stated the regulations which he meant to propose for the gradual abolition of the trade. The chief of these consisted in increasing the duties upon the age of the negroes imported; abolishing the trade as far as not necessary for the supply of our own islands; limiting the tonnage to be employed in it; punishing British subjects guilty of crimes in carrying it on; and providing that the importation of negroes into the British colonies should cease on the first of January 1800. Mr Wilberforce disclaimed all acquiescence in these propositions; and Mr Fox ridiculed them, by asking where the baptismal register was kept on the coast of Africa, by which the age of those who were to be exported could be ascertained. A variety of amendments were now proposed; and it was at length agreed that the period of abolition should be fixed for the first of January 1796. In the upper house the advocates of abolition were less successful; and they were not a little provoked at finding one of the younger branches of the royal family, the Duke of Clarence, now William IV., declaring himself decidedly hostile to their wishes. It was ultimately resolved that evidence should be heard at the bar, which necessarily produced delay, and little or no progress was made during the rest of the session. On the 18th of April

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Mr Sheridan moved for an inquiry into certain grievances complained of by the royal burghs of Scotland, fifty out of the sixty-six having concurred in the petition upon which Mr Sheridan grounded his motion. The motion was resisted by Mr Anstruther, Mr Dundas, and Sir J. St Clair Erskine, upon the general ground that no serious grievance existed; and the inquiry was refused by a large majority. Excepting some debates relative to the French revolution, nothing further of any importance occurred during the present session.

That we may not afterwards have occasion to interrupt the detail of the transactions connected with the state of affairs in France, we shall here notice the war in India, and which was now brought to a fortunate termination. The western side of the peninsula of Hindustan consists of a level country for upwards of seventy miles inwards. Behind this tract, and parallel to the ocean, runs a chain of lofty mountains, presenting a front towards the west, broken into tremendous precipices, but on the other side consisting of an extensive plain, gradually descending eastward to the Bay of Bengal, and forming the territory of the Mahrattas, Mysore, Madras, the Carnatic, and other states. Now as Tippoo Sahib possessed territory on both sides of these mountains, which are denominated Ghauts, from the narrow paths or passes by which they are crossed, the army of the Carnatic, under General Meadows, was directed to attack this territory from the east; the Bombay army, under General Abercromby, was to reduce the country to the westward of the Ghauts; the Mahrattas, and the nizam of the Deccan, agreed to attack Tippoo's country on the north and north-east, where it bordered on their own territories; and Seringapatam, his capital, was fixed upon as the point towards which the whole of the hostile armies were to direct and concentrate their efforts. On the 15th of June 1790, General Meadows entered Tippoo's country. The grand army on this occasion amounted to fourteen thousand effective European troops, a body of men which no power in India could encounter in the field. A variety of operations occurred; but little appears to have been effected towards the subjugation of the enemy, except the capture of the country to the westward of the Ghauts, till the end of February 1791, when Lord Cornwallis assumed the command in person. His first operation was directed against Bangalore, which he reached on the 5th of March; and a practicable breach having been made in the walls, the fort was stormed on the 21st, with little loss to the British. Of the garrison not less than a thousand were bayoneted, and a small number taken. Being joined by above fourteen thousand of the nizam's troops, and seven hundred Europeans, with four thousand five hundred and eighty troops under Colonel Oldham, Lord Cornwallis proceeded towards Seringapatam, where he arrived on the 13th of May, after a difficult march in bad weather over a hilly and barren country. Tippoo lost no time in displaying a considerable force in the field, with the view of covering his capital; but being beaten, though with little loss, he was forced to retire within the walls of Seringapatam, which, defended by a river at this season swelled with the rains, seemed secure against attack. In fact, circumstances had completely defeated the object of the combined operation which had been so ably projected. Lord Cornwallis was in want of provisions for supporting his army during a protracted siege; and as General Abercromby had not been able to join him from the west, it was judged expedient to retire to Bangalore, after destroying the battering train. On his retreat Lord Cornwallis was joined by the Mahrattas to the number of about thirty thousand. General Abercromby also retired across the Ghauts with a fatigued and dispirited army; and thus for the present Tippoo escaped a siege in his capital.

After his retreat, Lord Cornwallis employed himself for some time in reducing various small forts in the neighbourhood of Bangalore, some of them of such natural strength as, in any other hands but those of the feeble natives of that country, to be absolutely impregnable. Nundidroog, built on the summit of a mountain 1700 feet in height, three fourths of which are altogether inaccessible, fell after a siege which lasted from the 22d of September to the 18th of October; the place being assaulted by a breach at midnight, and taken, though not by surprise. The fortress of Savendroog, eighteen miles to the westward of Bangalore, was still more strongly situated. It stood on the summit of an insulated rock, rising about half a mile in perpendicular height, from a table or base of eight or ten miles in circumference, and divided at its summit into two hills, each having its peculiar defences, capable of being maintained independent of the lower works; while the whole was surrounded by a strong wall, with cross walls and barriers in every accessible part. Yet this stupendous fortress was taken in ten days.

In December, General Abercromby once more crossed the Ghauts, and proceeded eastward towards Mysore; while Lord Cornwallis, in the beginning of February 1792, advanced from Bangalore, and arrived on the 5th within sight of Seringapatam. Tippoo Sultan occupied a position under the walls, and there resolved to make a stand in defence of his capital. On the 6th, at eight o'clock in the evening, the attack was made on the sultan's camp. After a sharp engagement at different points, parties of the British crossed the river, and established themselves in the island on which Seringapatam stands. This movement proved decisive. Tippoo, finding himself in danger of having his retreat intercepted, was compelled to retire; and being pressed by the invaders on all sides, while his palace and gardens were in their possession, and his power reduced within the narrow limits of a fortress, he found it necessary to endeavour to purchase peace upon almost any terms. With this view he released two prisoners, Lieutenants Chalmers and Nash, and requested the former of these gentlemen to present a letter from him to Lord Cornwallis. The operations of the siege, however, still continued, and, on the 19th of February, the trenches were opened; whilst the Bombay army, under General Abercromby, invested the western side of the capital. But a cessation of hostilities was agreed to on the 23d of February, and a treaty of peace concluded, by which it was stipulated, first, that Tippoo was to cede one half of his dominions to the British and Indian powers; secondly, that he was to pay in money three crores and thirty lacs of rupees; thirdly, that all prisoners were to be restored; and fourthly, that two of the sultan's sons were to become hostages for the due performance of the treaty. On the 26th, the two princes, each mounted on an elephant, richly caparisoned, proceeded from the fort to Lord Cornwallis's camp, where they were received by his lordship with his staff. The eldest, Abdul Kallich, was about ten, and the youngest, Mooza-ud-deen, about eight years of age; and they were dressed in long white muslin gowns, with red turbans richly adorned with pearls. Educated from infancy with the utmost care, the spectators were astonished to behold in these children all the reserve, politeness, and attention, of maturer years. The kindness with which they were received by the British commander appeared to afford them satisfaction; some presents were exchanged; and the scene is described by an eye-witness as in the highest degree interesting. It was the 19th of March before the definitive treaty was finally adjusted, and delivered by the young princes into the hands of Lord Cornwallis.

In the meanwhile scenes of unparalleled interest were

about to be exhibited in Europe. These were produced by two causes; the ambition of the great military powers, and the French revolution. When, by an abuse of that policy which had once produced a vigilant attention to the balance of power, Russia and Austria had formed the project of extending their dominions, and when Prussia, probably nothing loth, found it expedient to concur in their policy, it became evident that the situation of Europe must speedily undergo great changes; whilst the French revolution, which had reduced that once powerful monarchy to a state of complete debility, seemed to afford an opportunity for the extension of the system of spoliation, by enabling the great powers to regard its ample territories as a further subject of partition. In another point of view, however, this revolution had now begun to be an object of no small alarm. The distinguished place which France had held among the nations of Europe rendered the late change of her government an object of universal attention; and there was a danger that it might come to be regarded as an object of imitation. The public discussions which took place in her national assemblies, and in printed publications, were conveyed, through the medium of a language universally understood, to the most obscure corners of Europe; and kings, nobles, and priests, became apprehensive that the contagion of innovation might not be confined to the country in which it had originated. Hence a general wish prevailed among the ruling classes that an effort should be made, before it was too late, to overwhelm the country from which so much danger to established governments was anticipated. Nor was this alarm altogether groundless. Men had almost everywhere outgrown their institutions; and whilst the former had been rapidly advancing, the latter remained stationary. The diffusion of wealth and of knowledge had created new interests, and led to the formation of new opinions; whilst a new class, formerly considered by rulers as of little or no importance whatever, except as subjects of taxation or instruments of ambition, was gradually and steadily rising into importance. The power of the nobility was rapidly passing away. The establishment of standing armies rendered them of little importance in war; and their wealth, as the great landholders of Europe, was daily more and more eclipsed by the opulence of the industrious classes; while, though titles of honour still remained, the estimation in which they were held was from various causes much diminished. But prodigious abuses remained. In those states which in former times had resisted the innovations produced by religious zeal, a wealthy priesthood and monastic orders still existed. The privileges of the nobles and of the clergy rendered taxation unequal; and commerce was embarrassed by restrictive laws and the privileges of old incorporations. There was therefore much to be reformed among the continental states of Europe, and the desire to obtain this reform was daily increasing.

In France, though the house of Bourbon had supported the Roman Catholic religion, yet, upon the whole, they were of a much more liberal spirit than any other royal family in Europe, and had given greater encouragement to letters, and to every kind of improvement. It is not wonderful, therefore, that the desire for improving the condition of mankind, and simplifying the arrangements of society, which had been so successfully pursued in other countries, should have become extremely prevalent in France. Unfortunately, however, though the character of the reigning monarch led him to encourage such projects, yet his undecided and inactive spirit, together with the embarrassed state of the finances, prevented him from taking the lead in these changes, or from repressing them when inordinately pursued by others. Meanwhile the example of prosperity enjoyed under the free constitution of Great

Britain, and the pride of having recently contributed to the establishment of a republican government in North America, fixed the character of any changes of a political nature, which at this period originated in France, whether among men of letters, the army, or the people at large. But in forming a political constitution, the vanity of the French, which induced them to avoid the appearance of servile imitation, had unhappily led them to differ in one most essential point from the British constitution. Their legislature consisted only of a king and a single house of representatives; whereas in Britain, by means of an intermediate estate, that of the peerage, naturally jealous of popular innovation, laws injurious to the royal prerogative are prevented from being enacted without the king being involved in dispute with the Commons. But in France the king himself was under the necessity, in such cases, of preventing the passing of the law, by personally interposing a negative; that is, he was placed in the unpopular and absurd situation of opposing his single judgment to the united will of a nation, and that too in perilous and critical times, when he could not fail to be suspected of disliking a constitution by which his power was taken away. Still, however, the representative government of Britain had been the model on which the French proceeded; and there is no doubt that they expected, during any contest in which they might be involved with the powers of the Continent, that they would enjoy, if not the support, at least the neutrality and favourable countenance of the British nation. But, on the other hand, the passion for innovation which seized the French nation, had in many instances proceeded to extravagant lengths; and there was reason to anticipate, on the part of the court of London, some alarm lest this passion might communicate itself in an inconvenient degree to Britain, where, though political abuses were less flagrant, and the passion would consequently find less food for its exertion, enough might yet exist to kindle disturbances and produce anxiety.

In the month of April 1792 a society was instituted in London, at the head of which appeared Mr Grey, Mr Baker, Mr Whitbread, Mr Sheridan, Mr Lambton, Mr Erskine, and several other distinguished members of parliament, for the purpose of obtaining a reform in the representation of the people. The association assumed the title of "The Friends of the People;" and it was speedily joined by some respectable characters in the commercial and literary world. Similar societies had, at former periods, existed in Great Britain; and the Duke of Richmond, Mr Pitt, and others, while they zealously advocated parliamentary reform, had attended meetings, not merely of persons acting in their individual capacity, but of persons appearing as delegates from other societies. At the present period, however, government appears to have regarded any association of this kind as unusually dangerous. The society had resolved that, early in the ensuing session, a motion should be brought forward in the House of Commons for a reform of parliament; and that the conduct of the business should be committed to Mr Grey and Mr Erskine; and, in conformity with the intentions of the association, Mr Grey, on the 30th of April, gave notice in the house of a motion which he intended, next session, to submit to their consideration, for a reform in the representation of the people. Its necessity, he said, had been admitted both by Mr Pitt and Mr Fox. The times were indeed critical, and the minds of the people agitated; but his object was to tranquilize them, by removing every cause of complaint. Mr Pitt declared, with unusual vehemence, that he objected both to the time and the mode in which this business was brought forward; that the present was not a time to make hazardous experiments; and that he saw with concern, gentlemen who

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might only desire an amelioration of our institutions united in an association with others who professed not reform only, but direct hostility to the very form of our government, and who threatened the extinction of monarchy and every thing which promoted order and subordination in a state. Mr Fox declared himself satisfied concerning the necessity of a reform in the representation, but that he never entertained very sanguine hopes of its accomplishment. Had his honourable friend consulted him, he should have hesitated in recommending the part he had taken; but having taken it, he could not see why the period was improper for the discussion. He professed a strong attachment to the British constitution, but did not regard this as the only free country in the world. After a tumultuous debate, in which Mr Burke and Mr Wyndham opposed Mr Sheridan and Mr Erskine, the subject was dropt. In the mean time a variety of political pamphlets daily appeared, the most remarkable of which was a publication by Thomas Paine, entitled *The Rights of Man*. This being a direct and inflammatory attack upon the whole principles and practice of the British constitution, administration thought fit to issue a royal proclamation against the publishing and dispersing of seditious writings; enjoining the magistrates to exercise vigilance in attempting to discover the authors of such writings, and exhorting the people to guard against all attempts which aimed at the subversion of regular government. It is not easy to perceive what precise purpose government intended to serve by this proclamation. The authors of the seditious publications alluded to did not conceal themselves; and the publications were openly sold without any attempt to suppress them by prosecutions. Perhaps it was intended to prepare the minds of men for future measures of direct hostility against France; perhaps it was only meant to rouse in the friends of government a spirit of opposition to the schemes of innovation which were at this time afloat. But whatever object administration might have in view, the effect of their proclamation was to excite general curiosity, and to serve as a public advertisement to the dangerous writings of Thomas Paine and others. In all parts of the island multitudes of persons, who had not hitherto interrupted their ordinary occupations to attend to the transactions of the Continent, or the speculative discussions which the present state of France had excited, were now seen crowding to the shops of booksellers inquiring for the treatises, the names or titles of which they knew not, against which the king's proclamation had issued; every printing press in the kingdom was occupied, and copies could scarcely be supplied in sufficient abundance to satisfy the demand. Nor did the folly of government stop here. On the 25th of May the master of the rolls moved an address to his majesty, in pursuance of the proclamation, the object of which he admitted to be Mr Paine's works; and having read an extract from one of the pamphlets of that writer, importing that all kings were tyrants, and their subjects slaves, he complained of the circulation of such publications. Mr Grey asserted that the minister, apprehensive of the effects of the association of the friends of the people, had concerted this measure with an insidious view of separating those who had long been connected; and alleged that such sinister practices were delighted in by a gentleman whose political life was a tissue of inconsistency, and who never proposed a measure without intending to delude his hearers. Mr Fox disapproved of the proclamation, because it was insidious and ambiguous, tending to propagate vague and unnecessary alarm. Mr Pitt did not impute any improper design to the new association; but it might be taken advantage of by ill-disposed persons, who, under the shelter of a respectable body, might push forward their own

sinister designs. The plan of the persons to whom he alluded was evidently to overturn the monarchy, and convert the kingdom into a republic. The address to the throne was agreed to without a division. In the House of Lords, on the 31st of May, a similar address was voted after some debate; and parliament was prorogued a short time afterwards.

The eyes of all Europe were now turned towards France; and the combination which the continental monarchs were known to have formed against that country was expected speedily to issue in action. The king of Sweden, who was fond of war, having now settled all disputes with Russia, offered to lead in person the armies of the combined powers, to destroy in France those new institutions and opinions which threatened to subvert the whole ancient system of public order in Europe. But continuing at variance with his nobility, he was assassinated at a masquerade on the 16th of March, by an enthusiast of the name of Ankerström, who boasted, on being seized, that he had liberated his country from a tyrant. In the meanwhile Leopold, emperor of Germany, had also died, and been succeeded by his son Francis II. Leopold had chosen to temporize with France; but his successor thought it unnecessary to observe any measures of caution with that country. On some remonstrances being made by the French government against his permitting troops to assemble on the frontiers, he avowed the concert of princes against the constitution of France, and stated it to be one of the conditions necessary to the preservation of peace, that the neighbouring powers should have no reason for the apprehensions which arose from the present weakness of the internal government of France. This acknowledged intention to interfere in the internal affairs of the French nation produced a proposal on the part of the French king to the national assembly, which was readily acceded to, for declaring war against the king of Hungary and Bohemia; and in a short time war was in like manner declared against Prussia and Sardinia.

In the meanwhile, though the combined princes had not probably as yet completely adjusted their respective shares of the spoils of France and Poland, yet, that the latter might be kept in a state of weakness, and that all traces of the new principles might as far as possible be obliterated, the empress of Russia gave notice of her determination to invade Poland with an army of a hundred and fifty thousand men, for the purpose of overturning the new constitution. No provision had been made by the king to resist such a force; but an attempt was made by Kosciusko, a Polish nobleman, who had served under General Washington in America, to defend the independence of the country; and some battles were, in consequence, fought. But the Russians continued to advance; and on the 23d of July the king, despairing of the result of the contest, submitted without reserve to Russia, and consented to the restoration of the old constitution, with all its weakness and anarchy.

While the combined princes were thus successful in the north, a very different fate awaited their efforts against France. The French king and his ministry caused the Austrian Netherlands to be invaded; and four different detachments under Lafayette and other generals were directed to enter that country at different points. They made some progress, but their raw troops were speedily repulsed; and when Prussia and Austria, who had undertaken the extinction of the revolution in France, had completed their preparations, the Duke of Brunswick was appointed commander of the combined armies. In a long manifesto issued by the emperor and the king of Prussia, they thought it necessary to disclaim all views of aggrandisement, or interference in the internal administration of

Run of France; but they declared themselves resolved to re-establish in that country public security, meaning the ancient order of things, and to protect the persons and property of all loyal subjects; threatened to punish as rebels all who resisted them; and declared their determination to give up the city of Paris to the most terrible vengeance if the least insult were offered to the king, the queen, or the royal family. The Duke of Brunswick also issued a manifesto, in his own name, dated from his head-quarters at Coblenz, in which he declared that the two allied courts had no intention to make conquests in France, and that they intended merely to deliver the king from captivity, and to restore his authority; he promised protection to all who submitted to the king, required the national guards to protect the public safety till further orders, and threatened to treat those who resisted him in arms as rebels to their king; enjoined the officers and soldiers of the French regular troops to submit to their legitimate sovereign; declared the French magistrates responsible, on pain of losing their heads and estates, for every disorder which they should not have attempted to prevent; menaced with death the inhabitants of towns and villages who should defend themselves against his troops, but promised protection to those who should submit; called upon the city of Paris to yield instantly to the authority of the king; declared the members of the national assembly, and the magistrates and national guards of Paris, personally responsible for disobedience, and amenable to military law; threatened, on the word of the emperor and king, if the palace of the Tuilleries were forced, or the least outrage offered to the king, queen, and royal family of France, or if they were not immediately placed in safety and set at liberty, to inflict the most exemplary punishment, by giving up the city of Paris to military execution; and declared that no other laws could be acknowledged in France, excepting those derived from the king, who was invited to repair to a frontier town, where he might provide for the restoration of order, and the regular administration of his kingdom.

This fatal manifesto had no sooner been published than all France was in commotion. The insolent language employed by two foreign powers, one of which had for ages been regarded with a sort of hereditary hostility, wounded the pride and the patriotism of every Frenchman; many who were enemies of the revolution could not brook an open attack upon the national independence; the zeal of those who had been enthusiastic promoters of freedom was kindled into absolute frenzy; and multitudes from all quarters hastened to the frontiers to share the danger of protecting the independence of their country. Unhappily for the monarch, the enemies of the nation had loudly declared themselves as his friends; and the restoration of absolute power was made the excuse for a hostile invasion of France. The king, therefore, and all who were attached to him, became objects of public hatred. The republican party had previously been small, but every hour now procured it a fresh accession of strength; and as it appeared dangerous to intrust the national defence to the hands of the king, it was resolved to get rid of his authority altogether. He was therefore dethroned on the 10th of August, and a republic proclaimed; and soon afterwards the capital became the scene of a sanguinary massacre of those persons who had been imprisoned on suspicion of adhering to his cause.

The Duke of Brunswick was, in the mean time, advancing into the heart of the country at the head of the combined army. Verdun and Longwy had surrendered to his arms in the end of August, and by this time he had reached the neighbourhood of Chalons. But he had met with opposition at every step of his progress; and the people of the country had removed all kinds of provisions from the

course of his march, while the French army under Dumouriez was supplied with every necessary. At length, as the French daily acquired discipline, General Kellerman was able to sustain at Valmy, with sixteen thousand men, an attack which, though made by a superior force, and persevered in for fourteen hours, effected nothing. Unable to make any serious impression on the raw levies opposed to it, the combined army also suffered by disease, which thinned its ranks; whilst the French were rapidly augmenting in numbers and courage; so that the advance to Paris, which seems to have been regarded as a sort of holiday promenade, became an achievement beyond the power of the invaders to execute. The king of Prussia was personally present with the army, and enabled to judge of the difficulties as well as dangers of his position. A war of the people revealed itself to his astonished view; and he perceived, that before he could accomplish the object of the coalition, he must not only conquer an army animated with an enthusiastic spirit of patriotism, but subdue a whole nation, ready to rise in mass to resist the aggression on its territory. The prospect was abundantly gloomy; and his Prussian majesty was appalled by it. Accordingly a retrograde movement was commenced without any attempt being made to penetrate farther into the country; and some suspicions were at this time entertained by discerning men, that France would not have much to dread from the obstinate hostility of the king of Prussia. After his retreat, the French, with wonderful activity, commenced offensive operations. In October General Custine reduced Mentz; in the same month Dumouriez invaded the Netherlands; on the 4th of November he fought the celebrated battle of Jemmappes, in which the Austrians were defeated; and as the emperor Joseph II., trusting to his alliance with France, had demolished the fortifications of the towns in the Netherlands, excepting Luxembourg and the citadel of Antwerp, the whole of that country, as far as the frontiers of Holland, now fell into the hands of the French. After the victory of Jemmappes, the government of the French republic, in order to conciliate the inhabitants of the Austrian Netherlands, resolved to open the navigation of the river Scheldt, which for some centuries had been kept shut by the jealousy of the Dutch, and thus to revive the trade of Antwerp, anciently one of the first commercial cities in Europe; and at the same time, in order if possible to counteract the combination of princes which had been formed against them, and which was now rapidly extending itself, the convention endeavoured to represent theirs as the cause of the people in every country, in opposition to that of their princes or hereditary rulers, who were denominated tyrants. Accordingly, on the 19th of November, the convention passed a decree, declaring, that they would give assistance, by means of their armies and otherwise, to every people who should attempt to establish a free government for themselves; and two months afterwards, the same body, by a majority of votes, ordered their imprisoned monarch to be put to death upon an accusation of having betrayed the cause of the nation.

The important transactions which were now taking place on the Continent produced a powerful impression upon the British nation, where the minds of men, as already remarked, had been directed to political questions by the royal proclamation against seditious publications. According as the sentiments of individuals varied, they perused with terror or with satisfaction the Duke of Brunswick's manifesto. Men of a patriotic character, however, whatever their political opinions might be, were not dissatisfied to see a nation capable, even amidst great public confusion, of repelling an invasion by the best disciplined armies, conducted by the most experienced commanders in Europe. But the

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horrid massacres which took place in September, together with the treatment of the royal family, excited very different sentiments, and were justly regarded as instances of unparalleled barbarity and wanton bloodshed; and the general result was, that by the months of August and September the whole British nation was in a most agitated state. In all companies, questions as to the comparative merits of monarchical and republican government, together with the propriety of a reform in the British House of Commons, formed the subjects of conversation; and persons of every rank entered into these discussions with singular eagerness. At the commencement of the revolution, very few had any idea that a republican government would be found practicable in France; and with regard to Britain, which enjoyed a sound administration of justice and much internal prosperity, no change whatever seemed necessary. But, in proportion as the French proved victorious, a republican government seemed less and less impracticable; and, as the subject of political abuses was canvassed, new ideas concerning the state of government in Britain began to be entertained. The scenes of tumult and corruption which occurred at elections, the inattention of parliament to the petitions for the abolition of the slave-trade, the memory of the coalition, and the reproach under which the House of Commons since that time had fallen, induced many to think a reform in the representation of the people absolutely necessary. New notions were daily broached at home, or imported from the volcanic region of France; and one in particular, that of the boundless perfectibility of the human mind, which is so true in theory, but so false in fact, became extremely prevalent, and gained singular favour. Men of science or benevolence, who judged of others from the rectitude of their own intentions; men of ardent imaginations, who believed every thing practicable to their unbounded zeal; and the young and inexperienced, who were unacquainted with the imperfections of the human character; all imagined that the period had arrived when mankind, become rational and just, were no longer to engage in wars of ambition,—when good sense alone was to rule the world,—and when the public business of society, reduced to the narrow limits of administering justice, and constructing high roads, harbours, and other works of internal improvement, might be conducted with little trouble, and without the establishment of different ranks and orders of men, or the display of military force for the preservation of public tranquillity. In short, a species of delirium upon political subjects prevailed; and mankind were led to believe that the greatest changes in the order of society might be accomplished with facility and safety.

Besides the society called the Friends of the People, other associations of less distinguished persons, called the Constitutional and Corresponding Societies, were established in London; and during the autumn societies assuming the name of Friends of the People were established in most towns and villages throughout the country, for the avowed purpose of bringing about a reform of parliament. In proportion, however, as the character of the French revolution began to display itself, in the sanguinary scenes which were daily enacted, and in the extravagant projects and sentiments which were entertained, persons of rank and property became alarmed. In the month of November an association was instituted at the Crown and Anchor tavern in London, the avowed object of which was the protection of liberty and property against the attempts of republicans and levellers; and similar associations for the support of government were set on foot in other parts of the metropolis, and throughout the country.

Parliament assembled on the 13th of December 1792. The speech from the throne intimated that his majesty

had judged it necessary to embody a part of the militia, and to assemble parliament previous to the time fixed for that purpose; and stated, as the causes of these measures, the seditious practices which had been discovered, and the spirit of tumult and disorder, shown in acts of riot and insurrection, which required the interposition of a military force in support of the civil magistrate. His majesty asserted, that he had observed a strict neutrality in regard to the war on the Continent, and had uniformly abstained from any interference with respect to the internal affairs of France; but that it was impossible for him to see, without the most serious uneasiness, the strong and increasing indications which had appeared there of an intention to excite disturbances in other countries, to disregard the rights of neutral nations, to pursue views of conquest and aggrandisement, and to adopt towards his allies, the States-general, measures which were neither conformable to the law of nations, nor to the positive stipulations of existing treaties. Under these circumstances he felt it his duty to have recourse to the means of prevention and internal defence with which he was intrusted by law, and to take the necessary steps for augmenting the naval and military force of the kingdom.

When the usual address was moved in the House of Commons, Lord Wycombe opposed it, on the ground that the speech from the throne had calumniated the people of England; that, so far from any spirit of insurrection existing, the kingdom was on the contrary overflowing with loyalty; that speculative political opinions had always been agitated under the free constitution of Britain; and that the persons who were thought most disaffected wished merely to reform that constitution. Mr Fox declared that the present was the most momentous crisis that he had ever read of in the history of this country; and that on the conduct of parliament depended, not merely the fate of the British constitution, but that of doctrines affecting the happiness and well-being of all human kind. He affirmed, that there was not a fact stated as such in the speech from the throne which was not false; he denied the existence of any insurrection; he justified the exultation which many persons had expressed on account of the retreat of the Duke of Brunswick; he described the calling out of the militia as a fraud, intended to induce the people to believe that cause of alarm existed, and thereby to bring them more completely under the influence of government; he treated the opening of the Scheldt as no just cause of war; and he recommended the removal of acknowledged grievances, as the certain means of appeasing the discontent of the people. Mr Windham now deserted the opposition, and joined administration in contending that there existed great danger to the constitution. He also declared his approbation of the march of the combined armies into France. Mr Dundas asserted, that under the pretext of reform, the example of France had been held out for imitation to the people of this country; and that the object of the French was evidently the aggrandisement of their dominions. Mr Sheridan denied the existence of any just cause of alarm, and declared that he would vote for the impeachment of any English minister who should enter into a war for the purpose of re-establishing the former despotism in France, or who should dare, in such a cause, to spend one guinea, or shed one drop of blood. From the commencement of Mr Pitt's administration a considerable number of members of parliament, the remnant of the coalition, had remained in opposition to his measures. But in consequence of the alarm which had at this time diffused itself among persons of high rank, and perhaps also as a plausible excuse for deserting a fruitless and unprofitable opposition, a great number of the members of the party hitherto hostile to administration now joined

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After the French king had been dethroned, Earl Gower the British ambassador was recalled; but the French ambassador, M. Chauvelin, still continued to reside in London. On the 15th of December Mr Fox moved that a minister should be sent to Paris to treat with the provisional executive government of France; declaring, that by this motion he meant not to approve of the conduct of the French government, but simply to record it as his opinion, that it was the true policy of every nation to treat with the existing government of every other nation with which it had relative interests, without regarding how that government was constituted; and that we could have no stronger objection to the existing government of France, than to the governments of Algiers and Morocco, in both of which countries we had resident consuls. This motion gave rise to a very animated debate, in which the opposition were accused of desiring to encourage discontent and sedition, and were defended by Mr Taylor, Mr Grey, and Colonel Tarleton. But Mr Fox's motion was negatived.

On the 19th of December Lord Grenville introduced into the House of Lords what has been called the alien bill, authorizing government to dismiss from the kingdom such foreigners as they might think fit, and which passed after some opposition from the Earl of Lauderdale and the Marquis of Lansdown. On the 28th of December Mr Secretary Dundas urged the House of Commons to adopt the alien bill, on account of the extraordinary influx of foreigners into the country, and the dissatisfaction of persons at home. Sir Gilbert Elliot, in supporting the bill, expressed his regret at being under the necessity of differing from his former political associates; and Mr Burke, as usual, spoke with very great vehemence on the subject. I vote, said he, for the present bill, because I consider it as the means of saving my life, and all our lives, from the hands of assassins. When they smile, I see blood trickling down their face; I see their insidious purposes; I see that the object of all their cajoling is blood. I now warn my country to beware of those execrable philosophers, whose only object is to destroy every thing that is good here, and establish immorality and murder by precept and example. While the alien bill was under consideration, another measure allied to it in principle was introduced; namely, a bill to prevent the circulation of assignats and other paper money under the authority of France. During the month of December an order of council was also issued for preventing the exportation of corn to France, and some ships which had grain on board were compelled to unload. On the 26th of December an act of indemnity passed upon the subject.

Affairs were now fast hastening to an open rupture with France. On the 17th of December M. Chauvelin transmitted a note to Lord Grenville, one of the secretaries of state, in which, in the name of the executive council of the French republic, he demanded to know whether his Britannic majesty was to be considered as a neutral or a hostile power. No wish, he said, existed on the part of France to entertain any doubt upon the subject; and they even desired to answer previously all those reproaches which

might be thrown out against them. With regard to the decree of the French convention of the 19th November, it had been misinterpreted. The French republic did not intend to favour insurrections in neutral or friendly states; and the decree applied only to those people who, after having acquired their liberty, might request the assistance of the French republic by a solemn and unequivocal expression of the general will. As to the neutrality of Holland, it would be respected while that power confined itself within the bounds of strict neutrality; and with regard to the opening of the Scheldt, it was a question irrevocably decided by reason and justice. It was added, that on the fatal supposition of a war being resolved on, whilst the intentions of France were thus peaceful and conciliatory, the whole weight and responsibility of it would sooner or later fall on those who had provoked it.

Lord Grenville's answer to this note, which bears date 31st December 1792, disclaimed considering M. Chauvelin in any other public character than that of minister from his most Christian majesty. It denied that the decree of the 19th November was satisfactorily explained, as the promoters of sedition in every country might still have in view the case in which they might count beforehand on the support of France. It affirmed that the neutrality of Holland had already been violated; and that the unimportance of the Scheldt would only render the opening of its navigation a clearer proof of the existence of an intention to insult the allies of England by violating their rights, which were guarded by the faith of treaties.

An official note from the executive power of France was transmitted through M. Chauvelin in reply to Lord Grenville's answer, in which another effort was made to explain the obnoxious decree of the 19th November. In this document all intention of effecting a conquest of the Netherlands was disclaimed; and it was added, that if the Belgians, from any motive whatever, consented to deprive themselves of the navigation of the Scheldt, France would not oppose it. In an answer to this note by Lord Grenville, these explanations were declared to be unsatisfactory. On the 17th of January M. Chauvelin sent to Lord Grenville his credentials as ambassador from the French republic; but on the 20th of the same month Lord Grenville sent him a letter refusing to receive his credentials, or to consider him in any other character than as one of the mass of foreigners resident in England; and on the 24th his lordship sent M. Chauvelin a passport for himself and his suite, declaring that, after the fatal death of his most Christian majesty, he could no longer be considered as holding any public character in Britain.

In consequence of this correspondence the French convention declared war against England and Holland on the first of February; three days previous to which Mr Secretary Dundas presented to the House of Commons a message from the king, announcing that copies of the papers now mentioned were laid before the house. It was added, that his majesty thought it necessary to make a further augmentation of his forces by sea and land; and that he relied upon the zeal of the House of Commons to enable him to take the most effectual measures for maintaining the security of his dominions, supporting his allies, and opposing the ambition of France, at all times dangerous, and peculiarly so when connected with the propagation of principles utterly subversive of the peace and order of civil society. And thus Britain became a party in the most sanguinary and eventful war that ever desolated Europe or afflicted humanity. In the month of April the French government made another attempt to enter into negotiations, and the minister, Le Brun, transmitted to England by a private gentleman letters to Lord Grenville, in which he requested passports for M. Maret to repair

Reign of George III. to Britain in order to negotiate peace; but no public notice whatever was taken of the application.

CHAP. XVI.

REIGN OF GEORGE III.—WAR WITH FRANCE.

Remarks on the Causes of the War.—Doubts as to its necessity.—Mr Pitt's absence from Parliament.—Debates on the French declaration of War.—Great failures in the Commercial world.—Mercantile Loan.—Government Loan.—Traitorous Correspondence Bill.—Parliamentary Reform.—Board of Agriculture instituted.—Relief of the Scottish Catholics.—Renewal of the East India Company's Charter.—Incidental Details.—Political Trials in Scotland.—Mr Muir and Mr Fysche Palmer convicted of sedition.—British Convention.—Foreign Treaties.—The War.—Defection of Dumouriez.—Favourable opportunity of making Peace lost.—Defective nature of the general plan of the War.—Opening of Parliament in 1794.—Debates on the Address.—Sources of Alarm.—Dread of Invasion, and of Plots and Conspiracies.—Secret Committee appointed.—Finance.—Policy of Prussia.—Maritime successes of Britain.—Victory of the 1st June 1794.—Continental Campaign.—Conquest of Holland by Pichegru.—Desertion of the Allies by Prussia.—Trials for Treason.—Acquittal of Hardie and Horne Tooke.—Trial of Watt and Downie.—Pop-gun Plot.—Meeting of Parliament.—Changes in the Cabinet.—Motion for entering into negotiations with France.—Mr Pitt's Amendment.—Duke of Bedford's Motion for Peace.—Mr Hastings' Trial concluded.—Debts of the Prince of Wales.—His Marriage.—War with Holland.—Expedition to Quiberon Bay.—Campaign in Germany.—Riots at the Meeting of Parliament.—Two Gagging Bills.—Pacific Message from the King.—Futile attempts at Negotiation.—Continental Campaign.—Maritime events.—Lord Malmesbury's Negotiation.—Bank Restriction.—Supplies.—Loyalty Loan.—War with Spain.—Mutiny in the Fleet.—Maritime operations.—Duncan's Victory.—Preliminaries of Peace signed at Leoben between the Emperor and the French Republic.—Treaty of Campo Formio.—Meeting of Parliament, and secession of the Opposition.—Relative situation of France and Britain.—Alarm of Invasion.—Defence Act.—Redemption of the Land-tax.—Navy Bill.—Duel between Mr Pitt and Mr Tierney.—Rebellion in Ireland.—Negotiations at Rastadt.—Switzerland seized by the French.—Importance of this country.—French Expedition to Egypt.—Battle of the Nile.—Its political results.—Russia joins the confederacy against France.—Minorca taken.—St Domingo abandoned.—Meeting of Parliament.—Income Tax.—Its Defects.—Union with Ireland proposed.—Fall of Tippoo Sahib.—Continental War.—Suvoroff's brilliant Campaign in Italy.—Attempt to drive the French from Switzerland.—Russians defeated by Massena at Zurich.—Invasion of Holland by the British.—Bonaparte declared First Consul.—Meeting of Parliament.—King's Speech.—Letter of Bonaparte to King George III.—Lord Grenville's Answer.—M. Talleyrand's Reply.—Rejoinder of the British Minister.—Debates in Parliament on the subject of this Correspondence.—Union with Ireland effected.—Debates on this subject.—Discussion respecting the expedition to Holland.—Mr Dundas's defence of that enterprise.—War in the East.—Treaty of El Arish disavowed.—Events in Egypt.—Campaign on the Continent.—Bonaparte enters Italy by the Great St Bernard, at the head of the Army of Reserve.—Battle of Marengo.—Operations in Germany.—Battles of Schaffhausen, Moskirch, Biberach, Augsburg, and Höchstet.—Continental truce.—Renewed.—Scarcity in Britain.—War with the Northern Powers.—Campaign in Germany.—Battle of Hohenlinden.—Peace of Luneville.—Change of Ministry and resignation of Mr Pitt.—Ostensible cause of Mr Pitt's retirement from office.—Probable real cause.—Character of his Administration.—New Ministry.—Royal indisposition.—Imperial Parliament.—Speech from the throne.—Debates on the Address.—Motion on the State of the Nation.—Conduct of the War defended by Mr Dundas.—Mr Pitt's account of the Change of Ministry.—Attack upon Copenhagen by Lord Nelson.—Death of the Emperor Paul.—Convention with Russia.—Naval engagement off the coast of Spain.—Attack on Boulogne.—Campaign in Egypt.—Death of Sir Ralph Abercromby.—Cairo taken.—Surrender of Alexandria.—Preliminaries of Peace.

In the quarrels of nations the real causes and motives of hostility are often very different from those which are ostensi-

sibly held out to the world: It was for some time customary in Great Britain to dispute with great eagerness the question as to who were the aggressors in this war; and in such disputes the friends of administration laboured under considerable difficulties, in consequence of the narrow ground upon which government had thought fit to rest the grounds or causes of hostility. The French government had been willing to explain away the offensive decree of the 19th November; the question about the Scheldt they were prepared to give up; and their ignorance of the nature of the British constitution, and of the elements which influence it in practice, prevented them from entertaining any idea that they were likely to encounter hostility from this country arising out of their revolution. Hence they not only neglected their navy, but had already in some measure ruined it, by sending their seamen to the frontiers in the character of soldiers. But though the French had not originally entertained hostile designs against this country, and though the ostensible causes of war on the part of Great Britain were weak, if not futile, it does not therefore follow that the motives which actually influenced the conduct of the British government on this occasion partook of the same character. France had been the ancient and dangerous enemy of England. She had suddenly fallen into a state of anarchy and consequent debility. All Europe was now leagued against her. Within she was divided by faction, and without she was assailed by immense hosts of the best disciplined soldiers in Europe, conducted by the most skilful leaders, to whom she had nothing to oppose but an undisciplined multitude, led on by inexperienced chiefs. In this state of things it seemed a safe measure to make war against her. To do so was only to retaliate the conduct she had herself pursued when she effected the dismemberment of the British empire, by assisting our revolted colonies. And the moment seemed to have arrived when, by dismembering France, she might be rendered for ever incapable of becoming dangerous to Britain.

But the most powerful incitements to this war undoubtedly arose from the example of political innovation, which it was so much the interest of every government in which there existed any mixture of hereditary authority, completely to defeat and overwhelm. To comprehend the full force of this motive for going to war, it is necessary to recollect the ferment which universally prevailed in the minds of men, and to imagine the situation and the feelings of a prince, who, though still safe, yet saw in his immediate vicinity the first of European monarchs hurled from his throne to a prison, and from the prison to a scaffold, and his power assumed by subjects who represented their conduct as the triumph of reason and of freedom; while the contagion of their sentiments, extending itself into neighbouring kingdoms, threatened to break out into actions not less violent than those of the revolutionists of France. In such a state of things, and under the influence of such sentiments, a war against France seemed to be a war in defence of the whole arrangements of society; and princes and nobles considered themselves as engaged in the protection, not merely of their power and station, but even of their personal safety.

Still, however, there were not wanting at this time some individuals who thought the war altogether unnecessary for the support of the British constitution and government. The great amount of the national debt, the influence of the crown, and the general happiness and good feeling of the people at large, gave powerful assurances of stability to government and safety to property. Even before the war commenced, the crimes committed by the French revolutionists had greatly diminished the popularity of their cause; and the associations on the side of government

of which were forming throughout the kingdom demonstrated the superiority of its adherents in wealth and numbers. It was therefore thought by many to be perfectly practicable to weather the storm without having recourse to hostilities; and there were even some who doubted the prudence of the war, notwithstanding the strength of the combination formed against France, and suspected, that in a sanguinary and desperate contest, armies conducted by princes, brought into power by the casualty of birth, might prove no match for French enthusiasm in the first instance, and far less ultimately for the superior tactics and enterprise which must speedily be introduced by men rising to command from the admiration produced by their talents and success. Lastly, if Great Britain, instead of assailing, had actively protected the independence of France, this would have secured such an ascendancy over her councils as might have enabled us to protect Holland, and to preserve the life, perhaps even the crown, of Louis XVI.; and, at all events, it would have placed us in a condition speedily to terminate the contest, without any important changes being suffered to take place in the relative strength of the continental states of Europe.

At the close of the year 1792 Mr Pitt did not attend parliament when it first assembled; nor did he make his appearance in the House of Commons till the alien bill was passing through its last stages in January, the discussion ended, and the relative strength of parties ascertained. The ostensible cause of his absence was, that having, on the death of the Earl of Guildford (Lord North), obtained the place of warden of the Cinque Ports, and thereby vacated his seat as a member of the House of Commons, he had gone down to Cambridge to secure his re-election. But the length of his absence suggested to some a suspicion that he was hesitating about engaging to support the court in its design of going to war; and in the mean time Mr Dundas stood forward in the House of Commons as the leading servant of the crown in support of the proposal for engaging in hostilities. On his return, however, Mr Pitt resumed his station in the debates of the house, and supported the measure with the utmost ardour. At this period Lord Thurlow was removed from the office of lord high chancellor, and succeeded by Lord Loughborough, who had originally owed his preferment to the support given by him to Lord North's administration and measures, and who, though hitherto an adherent of opposition, had in the recent debates defended the plans of administration.

On the occasion of a message from the king announcing the declaration of war by France, Mr Pitt stated that his majesty had always declined taking any part in regard to the internal government of France; that during the summer, while France was engaged in war with Austria and Prussia, he had in no way departed from his neutrality; but that as the French seemed now determined to subjugate other nations to their principles, he was under the necessity of interfering for the protection of his allies the Dutch, who had not indeed made any formal requisition for assistance, but to whose government the French had at all times been notoriously hostile. Mr Pitt also represented the language of the men in power in France as intolerably menacing towards the government of Britain, and as pre-eminently dangerous, from its tendency to introduce anarchy. He also adverted in strong terms to the death of the French king as a calamitous event; an outrage to every principle of religion, justice, and humanity; an act which, in this country and in the whole of Europe, had excited but one general sentiment of indignation and abhorrence, and could not fail to produce the same sentiments in every civilized nation. It was, he said, in all its circumstances, so full of grief and horror, that it must be a wish, in which all united, to tear it if possible

from their memories, to expunge it from the page of history, and to remove it for ever from the observation and comments of mankind. All the members who remained in opposition concurred in reprobating the conduct of the French revolutionists. Mr Fox, however, asserted, that the general maxim of policy was, that the crimes committed in one independent state could not be cognizable by another; he alleged that the topics adverted to by Mr Pitt were introduced into the debate to blind the judgment by exciting the passions; and he contended that the opening of the Scheldt, and the decree of the 19th of November, which were stated as the causes of the war, could never justify such a measure. He censured our past neutrality as unfair. While the French were invaded we remained quiet spectators; but on their becoming invaders in their turn, we said Europe was in danger, and interfered against them. He asserted that the real cause, always disavowed by our government, but ever kept in mind, was the internal government of France. The destruction of that government was the avowed object of the combined powers; but, though about to join them, we were ashamed to own that Britain was engaging to aid the restoration of despotism, and therefore the Scheldt and Holland were collusively had recourse to as pretexts. In the House of Lords, when the same subject was discussed, the Marquis of Lansdown contended, that, by sending an able and experienced minister to Paris, our government might have saved the life of Louis XVI. He declared that the war would be wanton on our part, and without provocation on the part of France; and he highly disapproved of the insulting manner in which M. Chauvelin had been dismissed.

At the period of which we are now treating, British commerce had become extremely extensive, and, owing to the commercial treaty, British and French merchants had become closely connected in their transactions. But from the sudden stagnation of trade which the war now produced, added to the alarms which had been excited upon political subjects, a sort of paralysis appeared to seize the country, and the number of bankruptcies exceeded all that had ever happened in the most calamitous times. A general stoppage of commercial credit took place, and no bank would venture to advance money to merchants or manufacturers; the consequence of which was, that many of them, with large quantities of goods in their possession, were unable to make the smallest payment. To apply a remedy to this alarming evil, several of the principal traders and merchants having waited upon Mr Pitt, requested the interference of government; and a select committee of the House of Commons was accordingly appointed to investigate the subject. After consulting with a variety of bankers, manufacturers, and merchants, the committee, on the 29th of April, gave in a report favourable to the solicitation of the merchants for relief; and a bill was introduced on the 1st of May, authorizing government to issue five millions by exchequer bills, in loans to such merchants and manufacturers as should deposit goods in security for the sum advanced. This measure proved extremely salutary. When it was found that the traders could obtain money from government, the bankers and other persons immediately evinced a willingness to advance them funds, or to give credit to their bills; trade gradually revived; and new channels were by degrees found out for the disposal of the productions of British industry.

On the 27th of March, Mr Pitt, in a committee of the House of Commons, stated, that he had borrowed for the service of the year the sum of L.4,500,000. The terms of the loan were, that for every L.72 advanced to the public the lenders should be entitled to L.100 stock, bearing an interest of three per cent., which would make a capital of L.6,210,000, the interest of which, to be paid by the pub-

Reign of George III. lic, would amount to L.186,000 a year. But there was another charge attending the loan; for, by the act for appropriating a surplus million to a sinking fund, it was provided, that whenever a new loan should be made, a fund equal to one per cent. on the whole of it must be provided, and applied to the liquidation of the principal. This, therefore, required an annual charge of L.62,100, and made the whole, including interest, L.248,400 per annum.

On the 15th of March the attorney general brought forward a bill for preventing traitorous correspondence with the king's enemies. The object of this bill was to prohibit the sale to the French government or the French armies, of arms, military stores, provisions, or clothes, under the penalty of high treason. The purchase of lands in France was also prohibited. No one was allowed to go from Britain to France without a license, under the penalty of a misdemeanour; and persons, though subjects of this country, coming from France, were prohibited from entering the kingdom without a passport, or presenting to the master of the vessel a declaration that, in the mean time, they would not quit the place where they had landed without the permission of a justice of peace, or finding security for their good behaviour. Lastly, the insurance of vessels either coming from France or going thither was prohibited. And this bill passed through both houses, supported by great majorities.

During the present session a very great number of petitions were presented to the House of Commons from different parts of the country, praying for a reform in the representation; and on the 6th of May Mr Grey brought forward the question, after presenting a petition which had been framed by the association called the Friends of the People in London. He asserted that the number of petitions now brought forward demonstrated that the House of Commons were not the real representatives of the people, and he gave a detailed statement of the various defects in the representation. The proposal of reform was chiefly resisted on account of the hazard attending it from the example of France, and on account of the extent to which its more ardent partizans out of doors wished it to be carried. Mr Pitt explained his motives for being formerly friendly to a parliamentary reform, and also his objections against it at the present moment. If the principle of individual suffrage, pointed at in several of the petitions, was to be carried to its utmost extent, it would subvert the peerage and depose the king, and, in fine, extinguish every hereditary distinction and privileged order, and establish that system of equalizing anarchy announced in the code of French legislation, and attested in the blood shed in the massacres at Paris. Mr Fox, on the contrary, represented in strong terms the inconsistency of Mr Pitt's present conduct with his former professions. As to the time of attempting a reform, he said, it had been proposed at all periods, in war and in peace; but they had all been represented as improper. The present was not a more dangerous period than the year 1782, when Mr Pitt himself had brought forward a similar proposal. These dangers he ascribed to the councils, generally unwise, and often wicked, by which the country had recently been governed. Mr Grey's motion was rejected upon a division by a majority of two hundred and eighty-two against forty-one.

During the present session several popular measures were adopted. On the recommendation of Sir John Sinclair, L.3000 per annum was voted by the House of Commons for the establishment of a board of agriculture; an institution which has been the means of collecting and conveying to the public much useful information respecting the most valuable of all arts. On a motion by the lord advocate of Scotland, Mr Robert Dundas, a bill was

brought into parliament in the month of April for the relief of the Roman Catholics of Scotland. The persons of that proscribed sect were still incapacitated by law from holding or transmitting landed property, and were liable to other severe restrictions; but these were removed by a bill which now passed without opposition. The passing of this bill was a popular measure, although a dozen years had scarcely elapsed since the people of Scotland had almost universally, and with the utmost violence, combined to oppose any relaxation of the penal laws affecting the Catholics. By the assistance of Mr Dundas, the inhabitants of the north of Scotland also obtained a repeal of the duty on coals carried coastwise, as far as respected that part of Great Britain; but the cities of London and Westminster were less fortunate in an attempt to procure a repeal of the taxes paid by them on the same article.

At this period the exclusive charter of the East India Company being within a year of its expiration, that body presented a petition for a renewal of it; and on the 23d of April the subject was considered in the House of Commons. Mr Dundas observed that the proposal which he was about to make of a renewal of the charter was undoubtedly attended with difficulties. No writer upon political economy had as yet supposed that an extensive empire could be administered by a commercial association; and no writer on commerce had thought that trade ought to be shackled with exclusive privileges. In deviating from these principles, which had been admitted and admired, he was sensible that his opinions had popular prejudices against them; but he was supported by successful experience; and when the house adverted to the peculiarities of the subject before them, they would at once see that he was not attempting to overturn theories, though he was unwilling to recede from old and established practice. It would be idle, and a proof of ignorance, to maintain that all the advantages which Great Britain possessed from its connection with India arose out of the present exclusive privilege of the Company; but it would be impossible to say what might be the political or commercial effects of a deviation from the present system. He then stated, that the shipping employed by the East India Company amounted to eighty-one thousand tons; that the seamen navigating those ships were about seven thousand men, who had constant employment; that the raw materials imported from India for the use of home manufactures amounted annually to about L.700,000; that the annual exports of British produce and manufacture to India and China in the Company's ships amounted to upwards of a million and a half sterling; and that great difficulties would attend any alteration of the present system of government in India, especially from the effects which the innovation might produce on the minds of the natives. He therefore proposed a variety of resolutions, the most material of which was, that it appeared fit and proper to continue to the East India Company their exclusive trade, within the limits now enjoyed by them, for a further term of twenty years, to be computed from the 1st of March 1794, but liable to be discontinued at the end of such a period, if three years' notice should previously be given by parliament. The resolutions proposed by Mr Dundas having been carried, a bill for renewing the East India Company's charter was brought in, and passed through both houses with little opposition. The trial of Mr Hastings still proceeded, though very slowly. It was now totally disregarded by the public.

During this year government sought to strengthen itself by erecting barracks in the vicinity of the great towns, in order that, by residing apart from the citizens, the soldiers might be removed beyond the contagion of popular opinions. But a considerable degree of political fermentation still prevailed in the minds of the people. In Eng-

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To promote the success of the war, a convention had been concluded in the spring between our court and that of Petersburg, stipulating for the prosecution of hostilities till the French relinquished all their conquests. A treaty was soon afterwards entered into with the landgrave of Hesse Cassel, for a subsidiary body of eight thousand men, which, by a subsequent agreement, was extended to twelve thousand; and the king of Sardinia engaged, for £200,000 per annum, to keep up an army of fifty thousand men, to be employed in the particular defence of his dominions, and

in general service against the enemy. Compacts of alliance were also adjusted with Spain, Naples, Prussia, Austria, and Portugal; and besides the stipulation of vigorous hostility, it was agreed that the conduct of other powers should be watched with extraordinary circumspection, lest they should abuse their professed neutrality by protecting the commerce or property of the French.

The detail of the military transactions of this eventful contest will be given under another head. But we may observe here, that during the present campaign the independence of France seemed at one time to be in considerable hazard. The faction which had overturned the monarchy, assembled a convention of national representatives, and endeavoured to establish a republican form of government, soon divided itself into two parties, those of the Gironde and the Mountain. The leading party, when the republic was first proclaimed, consisted chiefly of men of letters, who were led by speculative considerations to expect a wonderful amelioration of the human character, and of the state of society, from the changes they were producing. They wished to avoid sanguinary measures at home, and to restore tranquillity to their country as speedily as possible; but being equally deficient in energy and in knowledge of the character of their countrymen, they were successfully opposed by a turbulent and ferocious minority, led by Robespierre, Danton, and other men of the most unprincipled and sanguinary temper. The moderate and ruling party were also deceived by many of those whom they had employed; and at last their favourite commander, Dumouriez, having been repulsed in the Netherlands by the united forces of Austria, Prussia, and England, entered into a negotiation with these powers for the restoration of monarchy in France. But the treacherous project was rendered abortive by the fidelity of his army, which almost to a man deserted their general, and refused to bring the independence of their country into hazard by allowing foreign armies to interfere in the arrangement of its internal government. The defection of Dumouriez, together with the repulse of their armies, brought the moderate party, which still ruled in the French convention, into great difficulties; and it is an unfortunate circumstance that the British government did not then seize the opportunity of making peace with them. The hazard of innovation was now past. One of the maxims of the first French republicans was the love of peace and hatred of war; and the unsuccessful issue of the attempt made to penetrate into other countries must have added force to this sentiment. The tranquillity of Europe might thus have been insured; a mild party would have been preserved in power; Great Britain might have obtained an influence over their councils; and the sanguinary scenes which afterwards occurred in the interior of France, and upon the frontiers, might have been prevented. But this opportunity was unhappily disregarded; and from the distraction within, and the immense combination of force assailing France from without, the complete subjugation of that country was confidently anticipated. Meanwhile the failure of the military operations of the Girondists encouraged the wild party to attempt the overthrow of the more moderate French republicans, by exciting an insurrection of the populace in Paris; an attempt which unhappily proved but too successful. The national representatives were subdued, ninety members of the convention were imprisoned, and the minority were enabled to convert themselves into an apparent majority. By this event all France was thrown into confusion. The authority of the convention, thus impaired, was utterly rejected by the south of France; and the town and harbour of Toulon, with its fleet and stores, were surrendered by negotiation to the British admiral, Lord Hood, as trustee for the next heir of the monarchy. In the western parts of

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France the standard of royalty was reared, and joined by immense multitudes, who adhered to it with the most obstinate bravery, and were not subdued till after a greater expenditure of blood than was found necessary for the repulse of the combined armies of Europe.

On the part of Britain the general plan of the war does not seem to have been well contrived or properly carried into effect. A great part of the western coast of France was in full possession of the royalists, whilst the British navy at the same time commanded the ocean. It would therefore have been comparatively an easy enterprise to land an army on the French coast for the assistance of the royalists, and to advance through an open country, destitute of fortified towns, to the capital, and against a convention whose authority was scarcely acknowledged by a third part of the nation. Instead of this, the combined armies were directed against the French Netherlands, where they wasted the summer, as well as their own strength, in the siege of a few of the fortresses which defend that frontier; and thus the attack upon France was made upon its strongest side, at a distance from the centre of its power, and where the means of protracted resistance were the greatest; whilst leisure was afforded to the convention to establish its authority, to call out immense levies for the defence of the country, and before the close of the year to turn the tide of success in its favour. Toulon was retaken under the masterly direction of Bonaparte, who then first appeared on the revolutionary stage; and the Spaniards were beaten in the south; whilst, on the northern frontier, the British army was repulsed before Dunkirk, and the commander in chief of the allies, the prince of Cobourg, before Maubeuge. The Duke of Brunswick and General Wurmser were also driven across the Upper Rhine near Mentz, in the last two weeks of the year, after a succession of sanguinary conflicts, in which the French, by daily bringing forward fresh troops, at last succeeded with their raw levies in wearing down the strength and the courage of their veteran enemies.

The British parliament assembled on the first of January 1794. In the speech from the throne his majesty called the attention of the two houses to the issue of the war, "on which depended the support of our constitution, laws, and religion, and the security of all civil society;" to the advantages which had attended our arms both by sea and land; and to the expectation of ultimate success, founded on the circumstance that the efforts of the enemy, proceeding on an arbitrary system, which enabled them unjustly to dispose of the lives and properties of the people, must eventually introduce internal discontent and confusion. His majesty further stated the impossibility of making peace consistently with the permanent safety of the country, and the tranquillity of other nations; he noticed the treaties and conventions into which he had entered with foreign powers; and he mentioned the general loyalty which prevailed amongst all ranks, notwithstanding continued efforts to mislead and seduce the people.

As usual, the topics introduced into the king's speech became the subject of debate, both in the House of Lords and in the House of Commons; but they excited little attention throughout the nation. Men of property were generally so much alarmed by the events which had occurred in France, that they reposed implicit confidence in the government; and as administration seemed resolved not to despair of success, they derived great support from the approbation of the public. A minority, indeed, existed throughout the country, by whom the war was openly disapproved of; but as they consisted in general of persons of little influence, they were unable seriously to embarrass the measures of administration. When the king's speech was taken into consideration, Lord Wycombe moved an amendment to the address, recommending pacific

measures. But Lord Mornington, on the other hand, contended that the alternative of war or peace did not at present exist. Before we could relinquish the principles on which the war had commenced, proof was necessary either that the opinions which we had conceived of the views of France were erroneous, that the war had become desperate and impracticable, or that, from some improvement in the system and principles of the French, the necessity which had prompted us to commence the war no longer existed. Nothing of this sort had occurred. France entertained unlimited views of aggrandizement and ambition, connected with principles subversive of all regular government. Mr Sheridan entirely dissented from these views, and affirmed that Britain had acted with as little regard to the independence of neutral states as the French; that she had endeavoured to compel Genoa, Switzerland, and Tuscany, to join the confederacy against France, by the most insulting menaces; and that, as far as prudence would permit, she had assumed the same language towards Sweden and Denmark. If the French system of fraternization with other nations who wished to overturn their own internal government formed a just cause of war, their dereliction of that system ought to be a reason for making peace. He denied that the French were the original aggressors. I am astonished, said he, that the minister who sits near the Noble Lord does not himself feel it necessary to his own dignity to oppose this paltry argument of the act of aggression having come from them, instead of leaving that task to us, to whom comparatively the fact is indifferent. When he hears this called a war of necessity and defence, I wonder he does not feel ashamed of the meanness which it spreads over the whole of his cause, and the contradiction which it throws among the greater part of his arguments. Will he meet the matter fairly? Will he answer this one question distinctly? If France had abstained from any act of aggression against Great Britain and her ally Holland, should we have remained inactive spectators of the last campaign, idle, apart, and listening to the fray, and left the contest to Austria and Prussia, and whatever allies they could themselves have obtained? Does he then mean to say that he would have sat still; that Great Britain would have sat still with arms folded, and, reclining with luxurious ease on her commercial couch, have remained an unconcerned spectator of this mighty conflict, and have left the cause of civil order, government, morality, and religion, and its God, to take care of itself, or to owe its preservation to the mercenary exertions of German and Hungarian barbarians; provided only that France had not implicated Great Britain by a special offence, and forced us into this cause of divine and universal interest by the petty motive of a personal provocation? Mr Sheridan admitted that enormities had been committed in France, which disgusted and sickened the soul. This was most true; but what relation had these to England? And if they had, what did it prove? What, but the eternal and unalterable truth, that a long-established despotism had so far degraded and debased human nature, as to render its subjects, on the first recovery of their rights, unfit for the exercise of them? That we and all the powers of Europe had reason to dread the madness of the French, he agreed; but was this difficulty not to be accounted for? Wild and unsettled as they must necessarily be from the possession of such power, the surrounding states had goaded them into a paroxysm of madness, fury, and desperation. We called them monsters, and hunted them as monsters. The conspiracy of Pilnitz, and the brutal threats of the abettors of that plot, had to answer for all the additional horrors that had since disgraced humanity. We had covenanted for their extermination, and now complained that they turned upon

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Reign of us with the fury which we had inspired. No reasonable
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What was the state of our allies when we entered into the confederacy? The force of Austria unbroken, though compelled to abandon Brabant, and the power of the veteran troops of Prussia absolutely untried, though the seasons and disease had induced them to retire from Champagne. What was their state now? Defeat had thinned their ranks, and disgrace had broken their spirit. They had been driven across the Rhine by French recruits, like sheep before a lion's whelp, and that not after the mishap of a single great action lost, but after a succession of bloody contests of unprecedented fury and obstinacy. Where now was the scientific confidence with which we were taught to regard the efforts of discipline and experience, when opposed to an untrained multitude and unpractised generals? The jargon of professional pedantry was mute, and the plain sense of man was left to its own course. Mr Windham combated the opinion, that the enormities committed in France were the effects of the war. Mr Dundas defended the management of the war, and the activity which had been employed by government in conducting it. Our seamen in the beginning of the year were only fifteen thousand; in the course of the war fifty-four thousand men had been added. At the commencement of the war we had only thirteen ships of the line and thirty frigates fit for service; at the present time we had eighty ships of the line and a hundred frigates in actual employment, which, with the armed vessels now in the service of the public, made the whole above three hundred sail. In augmenting the army, the most effectual and economical system had been pursued; besides the militia, thirty thousand men had been added to the army. Mr Fox repeated that we were the aggressors in the war; contended that every state had a full right to regulate its internal government; and asserted, that the manifesto of the Duke of Brunswick had occasioned all the excesses of the French. He denied that the prodigal manner in which the French government conducted their affairs, and the confusion and ruin into which their finances were hastening, afforded any prospect of success to the allied powers. He remembered, that during the American war there was much talk of a vagrant congress, which was nowhere to be found, of their miserable resources, and their wretched paper money at three hundred per cent. discount, of which, with any few halfpence you had in your pocket, you might purchase to the amount of a hundred dollars. The Americans were represented as exercising on each other the most intolerable tyranny, on the royalists the most unheard-of cruelty; and it was then said, that if such principles were suffered to exist, if the cause of America were ultimately successful, there was an end of all civilised government, and England must be trodden in the dust. Yet then, said this statesman, I recommended negotiation, and lived to see Great Britain treat with that very congress so often vilified and abused, and the monarchy remain in sufficient vigour. Mr Pitt recapitulated the arguments formerly employed to prove that the aggression had certainly taken place on the part of France. The system adopted by the French, their usurpation of foreign territory, their hostile intentions against Holland, and their unprecedented views of aggrandisement and ambition, were subversive of all regular government; and unless it could be proved that we had mistaken these principles, we were bound to continue the war, even supposing that difficulty and disappointment had occurred in the prosecution of it. He conceived there was not the least probability of the continuance of the present government of France. The efforts of the people had been merely the result of terror, and were supported by desperate resources, which could not possibly continue.

He admitted that a safe and advantageous peace ought to be concluded, as soon as it could possibly be obtained; but the security and benefits of peace with France must depend upon the establishment of a government essentially different from the present. After a lengthened discussion, the address was carried by an overwhelming majority. In the House of Lords a similar debate took place, and similar arguments and views were respectively urged by the adverse parties; but ultimately the address was carried by a majority as decisive as that in the Commons.

It is one of the characteristics of the British nation, to be at all times easily thrown into a state of anxiety and alarm, by any object which government for the time thinks fit to represent as dangerous. The two greatest objects of political terror to Englishmen have at all times been the fear of a foreign invasion, and the dread of secret conspiracies by a disaffected party. During many ages Britain has not been successfully invaded; and, since the time of the Spanish Armada, no such attempt has been made by any of those governments with which Britain has engaged in hostility; but this circumstance, which leads reflecting persons to regard such a project as extremely unlikely to occur, seems to produce a contrary effect upon the people at large. The evils attending invasion having never been felt, lay hold of their imaginations, in the wildest and most exaggerated forms; and from the terror thus produced, they are prevented from reflecting upon the difficulties attending the project, which deterred Louis XIV. from attempting it while in the height of his power, and with the advantage of a disputed succession to the crown. Yet such is the credulity of the British nation upon this head, that administration can at any time throw them into a state of the utmost consternation, by expressing an apprehension of a French invasion; and from this apprehension ministers usually derive very considerable advantages. The voice of faction is for a time silenced by patriotic terror, and all parties hasten to arrange themselves under the banners of government for the defence of their country. The dread of plots and conspiracies produces effects somewhat similar. It is true that no conspiracy of Englishmen was ever productive of danger to the government whilst it remained even tolerably popular; but this never prevents the nation from being thrown into consternation, by intimations, on the part of government, that some desperate conspiracy is secretly carrying on, and ready to burst forth, to the utter destruction of the public tranquillity.

During the war of which we are now treating, Mr Pitt's administration derived incredible strength from these two sources of terror; the fear of invasion, and the dread of conspiracies by disaffected persons. Nor did he want skill to profit by them. At the commencement of the war it had been believed by most persons, and perhaps by government, that it would be of short duration, the state of anarchy which succeeded the overthrow of the monarchy in France seeming to render that country an easy prey to the powerful armies by which it was invaded; and when any doubt of success was expressed, it was answered, that after making trial of the war for a year, we might desist in case we were unsuccessful. But although the original state of affairs had been considerably altered by the successes of the French, yet the British government still resolved to persist in the war, which, however, was now daily becoming less popular. On the other hand, the French leaders were greatly irritated by the persevering hostility of the British ministry, and in the pride of victory menaced England with invasion. It is evident that they had still too much business upon their hands on the Continent to be able to make the slightest attempt to carry their threats into execution; but the British administration, taking advantage

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of the threat, expressed their fears that it might be successful; and proposed the arming of associations of volunteers, both cavalry and infantry, throughout the island, for the defence of the nation against foreign invasion, and the efforts of disaffected persons at home. They also encouraged the raising of subscriptions to defray the expense of these armed associations; and although the measure was disapproved by the minority in parliament, as an unconstitutional mode of raising money, it was supported by the majority. An act was passed authorizing the embodying and training of volunteers, and the measure was carried to a considerable extent throughout the country. In like manner, though the political ferment occasioned by the French revolution had now considerably subsided, administration, aware of the strength derived from keeping the country in a state of anxiety upon political subjects, announced to parliament, by a royal message, that seditious practices had been carried on by certain societies in London, with a view to overturn the constitution, and introduce the system of anarchy which prevailed in France; and that their papers had been seized, and were submitted to the consideration of the house. On the same day Thomas Hardie, a shoemaker in Piccadilly, who had acted as secretary to the London Corresponding Society, and Daniel Adams, the secretary to the Society for Constitutional Information, were apprehended for treasonable practices, upon a warrant from Mr Dundas. Mr Horne Tooke, well known for his ingenious philological writings, as well as for the political part he had formerly acted in the turbulent days of Wilkes, the Reverend Mr Jeremiah Joyce, Mr Holcroft a dramatic writer, Mr Kyd a barrister, and Mr John Thelwall, who had for some time entertained the town in the character of political lecturer, were also in a few days arrested and committed to the Tower on a charge of high treason.

For the sake of giving solemnity to the inquiries made into this conspiracy, a secret committee of the House of Commons was chosen by ballot, the members of which were the friends of the minister. The report of the committee concerning the alleged conspiracy amounted to little more than a recital of a number of advertisements from societies, or accounts of their debates, which had previously been inserted in the public newspapers; but it served as a pretext for suspending the Habeas Corpus act, and thereby enabling ministers to prevent any political movement, or avowed disapprobation of their measures, from being rashly exhibited out of parliament. In the meanwhile the dread of invasion, added to the political alarm which had previously diffused itself throughout the country, and which was thus artfully maintained, conferred upon ministers a degree of strength which, for a century and more, no British administration had possessed. Almost all men of property were their adherents; whilst their antagonists sunk into utter discredit, and suffered a species of persecution in every department of society; so that it became dangerous to a man's prospects in the world, and in ordinary business, to express the slightest doubt of the propriety of any measure approved by government.

In the early part of his administration, Mr Pitt had endeavoured to rest his reputation, in a considerable degree, upon the improvement of the finances, and the hope which he held out of paying off the national debt. He now deserted all such views; and taking advantage of the uncontrolled power he possessed at home, and the pliability of parliament, he engaged in a career of unexampled expenditure, in corrupting successive parties in France, or in the management of the war.

From its first rise to eminence as a European power, Prussia considered France as its protector against the ambition of Austria. During the present year, notwithstand-

ing the resistance of a party in Poland, headed by the brave Kosciusko, that country was partitioned, and Prussia obtained an ample share of its territory. But the partition of France was an object from which Prussia had every thing to fear, as it would destroy the only power by which Austria, the inveterate enemy of Prussia, had at all times been kept in awe. When the Prussian monarch found it necessary, in conjunction with his allies, to invade France in 1792, he retired upon the first appearance of a tolerably firm opposition, and gave the republic a respite of another winter, during which to arrange its strength, and call into action its resources. In the year 1793 the Prussians remained extremely inactive till towards the close of the campaign, when at last, in consequence of repeated remonstrances from their allies, they advanced against Alsace; but being there repulsed, and the republic beginning to exhibit on all sides a firm military front, the king of Prussia declared that the expenses of the war were more than his finances could sustain, and required the other German states to supply him with money, threatening in case of refusal to abandon the common cause; and on their declining to comply with his demands, he actually began to withdraw his troops. But by this time the British ministry had engaged in the war with a degree of eagerness which induced them to make every sacrifice to obtain success; and therefore, to avoid losing the assistance of Prussia, they offered a subsidy, which was finally adjusted, upon the condition that his Prussian majesty was to furnish sixty-two thousand troops, or thirty thousand beyond his contingent; for which his Britannic majesty was to pay him L.50,000 a month, L.100,000 a month for forage, L.400,000 to put the army in motion, and L.100,000 on their return, or in all, for the remaining nine months of the year, L.1,350,000. At this rate the expense of the whole year would amount to L.1,800,000, of which the states general were to pay L.400,000; and the forces thus subsidized were to be commanded by an officer to be named by the king of Prussia. By this treaty the king of Prussia was enabled to keep his army upon the war establishment with little additional expense to himself, and with the power of claiming a share of whatever conquests were made from France; whilst, by retaining the appointment of the general of the subsidized army, he preserved a complete command over it, and might prevent his troops from being worn out by active service, or restrain them from doing greater injury to the French republic than he should judge prudent or expedient in the circumstances.

All Europe looked forward with great anxiety to the approaching campaign as decisive of the contest; in which its whole powers, excepting Russia, Sweden, and Denmark, were actively engaged. At sea, where her strength could be most effectually exerted, Great Britain was eminently successful. An expedition under Sir Charles Grey and Sir John Jervis was sent to the West Indies, where Martinique, St Lucie, and other islands, were taken. In the Mediterranean the French were driven from the island of Corsica, and the inhabitants acknowledged the king of Great Britain as their sovereign. But the most signal victory was that gained by Lord Howe over the French fleet on the first of June near Brest. During the first years of the revolution France had suffered much distress from a scarcity of grain; and such was the inveteracy with which the present war was conducted, that the British government had formed a plan of subduing that nation by famine, by preventing their obtaining supplies of provisions from any foreign country. In their distress the French rulers had applied for assistance to the United States of America, which still owed a considerable debt to France, contracted during the war by which their own re-

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On the part of the French, however, these colonial and naval losses were greatly overbalanced by the general result of the campaign. The allies still concentrated their principal force against the Netherlands, and with that view, at the commencement of the campaign besieged and took Landrecies; but the fortune of the war was speedily changed. General Pichegru advanced into maritime Flanders, and in a variety of engagements defeated Count Clairfayt, an Austrian general of great activity, who ruined his army by incessant and sanguinary efforts to drive back a superior enemy. An attempt made by the grand army to cut off the retreat of Pichegru proved unsuccessful; and the latter having in turn manœuvred to intercept the communication of the imperialists with their magazines at Ghent, was in like manner repulsed; but the obstinate conflict which he maintained, and the steady fire of his troops, during a succession of conflicts, which lasted from daybreak till sunset, convinced the allied armies that the invasion of France had become a hopeless project. At last the French advanced, under General Jourdan, from the eastward, and at Fleurus gained a victory which cost the Austrians nearly fifteen thousand of their best troops. Mutual disgust, as well as discouragement, now prevailed among the allies. The Austrians retreated, leaving the Duke of York at the head of the British and Hanoverian forces in considerable peril; but, with the assistance of the Earl of Moira, his royal highness made good his retreat. This nobleman, who had distinguished himself in the American war, was opposed to the present war, which he had reprobated in his place in parliament. But having nevertheless been sent by administration with a feeble armament to assist the royalists on the western coast of France, and finding himself too weak to effect any thing of importance in that quarter, he had brought back his troops; and was afterwards sent with them to defend Ostend, where, learning the difficult nature of the Duke of York's situation, and perceiving that Ostend could not long be protected after the rest of Flanders had been deserted, he marched across the country, and in the face of much danger, and under great hardships, effected a junction with the principal British army, to which this reinforcement afforded seasonable aid.

The French were no less successful on the Upper Rhine, and on the frontiers of Italy and of Spain. At the end of the campaign, an intense frost having set in, they reinforced their armies, and Pichegru invaded Holland. After a variety of engagements the British and Hanoverians, together with some Austrian auxiliaries, whom Britain had subsidized, were repulsed, and found it necessary to abandon Holland to its fate. Many Dutch families sought

refuge in Britain. When Utrecht had submitted to the enemy, the stadtholder, knowing that Amsterdam would not be defended, left his country, and escaped in a fishing-boat to England, where he and his family became immediate objects of royal liberality, and were treated with the respect due to their rank and misfortunes. The Dutch, who had viewed the English with a very unfriendly eye since the revolution of 1787, appeared to be highly pleased with this change in their affairs. They had treated our soldiers with great illiberality, and refused to alleviate by kindness or compassion the sufferings of the wounded, or the distress of the fugitives, who at length effected their retreat to Bremen, after a long and severe trial of their patience and fortitude. The United Provinces were now revolutionized on the French model. Liberty, equality, and the rights of man, were proclaimed; representatives of the people were chosen; and the regenerated state was named the Batavian Republic. But the pretended friends of the Hollanders, in rescuing them from what they termed a disgraceful yoke, did not suffer them to enjoy real freedom or independence.

The result of these successes was, that the king of Prussia perceiving France restored to more than her ancient energy, and capable of humbling his enemy and her ancient rival, the house of Austria, deserted the coalition, refused to accept of any further subsidy from Britain, and took under his protection, as neutral states, the whole princes of the north-west of Germany; thus becoming the ostensible head and guardian of a large division of the empire, which was enabled to recover its tranquillity, and to become a calm spectator of the prolonged contest, which the rest of the empire under Austria continued to carry on against France. Spain was also under the necessity of imitating the example of Prussia, though upon less favourable terms, being constrained to relinquish, as the price of peace, her half of the island of St Domingo; and the Duke of Tuscany also deserted a contest in which he had reluctantly engaged.

In the meanwhile administration pursued their system of alarming the friends of internal tranquillity, by the dread of conspiracies and attempts against the constitution. The persons who in the month of May had been imprisoned on a charge of high treason were brought to trial in the end of October. The first was Thomas Hardie. His indictment stated nine overt acts of high treason; first, forming an intention of exciting rebellion and insurrection, and conspiring to subvert the government and depose the king; secondly, writing various books, pamphlets, letters, and addresses, recommending delegates to a convention; thirdly, consulting as to the means of forming such a convention; fourthly, agreeing to form themselves into a society for the purposes aforesaid; fifthly, causing arms to be made in order to subvert the government and depose the king; sixthly, conspiring to levy war within the realm; seventhly, conspiring to aid the king's enemies; eighthly, composing and publishing certain books, pamphlets, letters, exhortations, and addresses, for the purposes aforesaid; and, lastly, procuring arms for the purpose of levying war against the king, and exciting rebellion and insurrection. The written evidence consisted chiefly of advertisements and addresses, published in the newspapers, many of which were expressed in a very intemperate style; and of the proceedings of the societies, which were all public. With regard to the alleged charge about arming the people, it appears to rest upon no solid foundation; and the accusation and defence, therefore, turned chiefly upon the question of treasonable intention upon the part of the accused and his associates. Hardie was ably defended by the Honourable Thomas Erskine and Mr Vicary Gibbs, and the prosecution was conducted

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by the attorney and solicitor general; but after the proceedings had been protracted to the eighth day, the jury, after some deliberation, brought in a verdict of not guilty. The next trial was that of Mr Horne Tooke, who endeavoured to prove that he had merely followed the example of Mr Pitt, in recommending a plan of parliamentary reform. The minister was examined on the occasion, chiefly regarding the proceedings of the popular party, before the close of the American war, with a view to establish this point; but he evaded most of the questions by alleging a want of recollection. The acquittal of Mr Tooke was followed by that of Mr Thelwall; and a despair of convicting any one of the supposed traitors led to the abandonment of the other indictments.

As the war was becoming unpopular, the acquittal of these persons, which tended to discredit the alarms kept up by the friends of administration, was felt by them as an additional misfortune. Had the indictments been laid for sedition only, the prosecutions would probably have proved successful; but ministers were led to carry matters the length of an accusation of treason, by their success in a similar charge at Edinburgh in the preceding month of September, against two persons named Robert Watt and David Downie. Watt had been a spy, employed by government to attend political societies, and discover the designs of the leaders; but as he was a needy person, and had been unable to communicate intelligence of much importance, he had received little pay. To earn more money, he thought fit to contrive a plot, which he communicated to Downie and some others, for seizing the castle and the public offices at Edinburgh, with a view no doubt of afterwards holding out his associates to government as criminals. Neither he nor they had any means of carrying such a plan into effect. But Watt having procured some pikes, deposited them in a cellar in his own house, where they were accidentally discovered; the spy was apprehended; and the persons to whom he had communicated his plan having come forward as witnesses against him and Downie, they were both found guilty of high treason. Downie, who had done little more than appear to approve of Watt's plan, was recommended to mercy, and afterwards pardoned; but Watt was executed.

Another source of encouragement to proceed with measures of severity arose at this time out of a plot brought to light by some informers, and by way of ridicule termed the Pop-gun Plot. The persons implicated in this charge were, John Peter Le Maitre, a native of Jersey, and apprentice to a watch-case-maker in Denmark Street, St Giles; William Higgins, apprentice to a chemist in Fleetmarket; and a man of the name of Smith, who kept a book stall in the neighbourhood of Lincoln's-inn. Their accuser was one Upton, an apprentice or journeyman to a watchmaker. Le Maitre, Higgins, and Smith, were apprehended on Saturday the 27th of September, by a warrant from the Duke of Portland, as secretary of state, and examined on Sunday the 28th, before the privy-council, the lords of which were summoned again to attend on Tuesday upon the same important business. The charge, supported by the testimony of Upton, bore in substance, that an instrument was to have been constructed by the informer Upton, in the form of a walking stick, in which was to have been inserted a brass tube of two feet long; that through this tube a poisoned dart or arrow was to have been blown by the breath of the conspirator Le Maitre at his majesty, either on the terrace at Windsor, or in the playhouse; and that the poison was to have been of so subtle a nature, that if the point but glanced upon the king, it would produce instantaneous death. Nothing short of the most consummate ignorance of the state of human science could, on any ordinary occasion, have procured a moment's at-

tention to so ridiculous a story as this; but such is the well-known credulity of the English nation regarding political dangers, that administration and their friends appear to have regarded this plot as an affair of some importance.

Parliament assembled on the 30th of December. In the speech from the throne his majesty urged the necessity of persisting in the war, however unfortunate it had been; and noticed the rapid decay of the resources of the enemy. The Dutch had, he observed, from a sense of present difficulties, entered into a negotiation for peace with the prevailing party in France; but no established government could derive security from such a negotiation. The most effectual means had therefore been employed for the further augmentation of the forces, on whose valour, as well as on the public spirit of the people, he placed the utmost reliance. This speech also mentioned the accession of the sovereignty of Corsica to the British dominions; a treaty of amity and commerce with America; and the conclusion of a treaty of marriage between the Prince of Wales and the Princess Caroline of Brunswick.

When an address to his majesty in similar terms with the speech was moved in common form, very animated debates took place in both houses of parliament. The war was attacked and defended upon the usual grounds, with this additional circumstance, that the events of the late campaign gave considerable countenance to the assertions of opposition, that all hope of ultimate success was irrational. Administration, however, were no less powerful than formerly. On the last day of the preceding session they had received into official situations some of those supporters of the war who in former years had opposed their measures. Earl Fitzwilliam had been appointed president of the council; the Duke of Portland became one of the secretaries of state; Earl Spencer was declared keeper of the privy seal; and Mr Windham was appointed secretary at war. But notwithstanding these official changes, Mr Pitt, with the aid of his friend Mr Dundas, and his relation Lord Grenville, was understood to retain the efficient power of the state. Mr Dundas still retained the management of the war with France; and, as a kind of third secretary of state, he performed a considerable part of the business which would otherwise have devolved upon the Duke of Portland; while at the same time he continued, as president of the board of control, to superintend the affairs of India, and to hold the office of treasurer of the navy. Earl Fitzwilliam was soon got quit of, being sent to Ireland as lord-lieutenant, under an agreement that he was to have full power to promote the repeal of the penal statutes against the Catholics, and to concede certain privileges which had been withheld in 1793. But ministers having altered their sentiments about some of these points, prohibited him from proceeding; and as he insisted upon the terms on which he had accepted his situation, he was recalled and dismissed from office. By joining ministers for a time, he was prevented from acting along with opposition in reprobating the war, and thus he was left insulated and separated from both parties.

Among the debates of the present session, one of the most remarkable was that which occurred upon the motion of Mr Grey in the House of Commons on the 26th of January 1795, that the existence of the actual government of France ought not to be considered as precluding a negotiation for peace. After two years of war, which had drained this country of its blood and treasures, we did not appear to be one point nearer the object for which it was undertaken. From certain words of the minister on a former occasion, Mr Grey inferred that this was a war of extermination, a mortal strife, to be carried on till one of the parties should be destroyed. He wished, by the motion, to put the question to issue whether this opinion was

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countenanced by the House of Commons. The public at large, and even the enemy with whom we were contending, had a right to know the length to which the contest was to be carried, and the terms upon which peace was to be obtained. He endeavoured to show that there existed no prospect or chance of success in overturning by force of arms the republican government of France, and that a war persisted in with that view must necessarily be absurd; that the people of France were too firmly attached to their new arrangements to be likely to give them up, however they might change their leaders; that a dependence upon a decay of their finances was equally ill founded; and that, both in the American war and in this, the affairs of the British nation were unfortunately intrusted to persons unable to distinguish between the fallacy of imperfect calculations and the energy of a people struggling for independence. Our own resources were, he doubted not, equal to every thing to which they ought to be applied, but not equal to the conquest of France, or to a war of aggression. The exhausted state of the emperor's finances was evinced by a memorial he had recently addressed to the circles of the Upper Rhine. Was it then from him, from the Italian states, the kings of Sardinia, Naples, and Spain, or from our disgraceful alliance with the empress of Russia, that we expected assistance? Or was it from our good German ally, who had taken L.1,200,000 of our money, who had not brought into the field the sixty-two thousand men for which he stipulated, who had denied our right to command any of the Prussian troops, and contended that they ought not to march against the French, but to remain to defend Germany? The strongest reason which a great nation could have for war, was the defence of its honour; and this, he contended, we had so fully vindicated, as to secure us from future insult. The decree of the convention in November 1792 now formed no bar to a negociation, as that declaration had been repealed, and followed by a contrary declaration. As additional reasons, Mr Grey noticed the capture of Holland, and the debates in the diet at Ratisbon, in which all parties agreed for overtures to the enemy, except the elector of Hanover and the landgrave of Hesse. Mr Pitt, in reply, asserted that the motion was utterly inconsistent with the sentiments formerly expressed by his majesty and by parliament, and therefore proposed an amendment, importing that it was the determination of the house to prosecute the war, as the only means of procuring a permanent and secure peace. Mr Pitt contended that no nation at war with another ought to treat for peace with a government which could not give security; that this last was the great object by which alone the war could be terminated; that nothing but a series of revolutions had been generated under the system and principles now prevalent in France; that the agriculture and commerce of France were in the most disastrous situation, and justice almost unknown; that the house would never willingly consent to treat with a nation of atheists; that in April 1793, the French had enacted the penalty of death against any person who should propose peace with any country which did not acknowledge the French republic one and indivisible; that the admission of these principles amounted to a confession of the usurpation and injustice of every other government; and that treating with France would involve an acknowledgment of those principles which condemned the usurpation of all other governments, and denied the very power which they were exercising. Mr Fox accused the minister of tergiversation, and contended, that he had in fact found it necessary to alter his conduct; and that the impolitic speech which he had put into the mouth of his majesty, at the opening of the session, had made a serious impression upon the public. What, he asked, would have been the feelings of Englishmen, if

the convention had determined never to treat with them until there was a reform in the English government? He recalled to the recollection of Mr Pitt the declaration of his father, that they should die in the last breach before they granted the independence of America; yet the first act of the political life of the son had been to sign the very independence which his father had deprecated. Necessity had dictated that act; and he must now, on the same account, retract his declaration respecting France. The motion was opposed by Mr Dundas, on the ground that it would fetter the executive government in their negotiations for peace; and ultimately the motion was negatived, and the amendment adopted.

On the following day the Duke of Bedford brought forward, in the House of Lords, a motion similar to that which Mr Grey had introduced into the House of Commons; and Lord Grenville moved an amendment precisely similar to that which had been proposed by Mr Pitt and carried in the House of Commons. A great deal of discussion followed; but ultimately a large majority voted in favour of the amendment. The victories of the French during the last campaign, and the despair of ultimate success in the war, which now began to be entertained throughout the country, encouraged opposition to renew the subject under a variety of forms, and to urge ministers to enter into a negociation; but on every occasion the motions made by them were negatived by a similar superiority of numbers.

The number of seamen and marines voted during the present session amounted to a hundred thousand, whilst a hundred and nineteen thousand three hundred and eighty men were voted to form the guards and garrisons. In order to procure the requisite number of seamen, the parliament required the merchants to give up a part of the crews of their shipping, in proportion to the tonnage, and ordered every parish to furnish one man for the service. A loan of L.18,000,000 was found necessary, together with a large issue of exchequer bills, as the supplics voted amounted to no less than L.29,307,000. The new taxes were made payable on wine, spirits, tea, coffee, stamps on deeds, insurance on ships and cargoes, timber, and on persons wearing hair-powder.

During the present session the trial of Mr Hastings was at length brought to a conclusion. The subject was discussed in a committee of the House of Lords. The lord chancellor and the Earl of Carnarvon considered Mr Hastings as criminal; but he was ably defended by Lord Thurlow, who was supported by the Marquis of Lansdown, the Bishop of Rochester, and others. When every part of the accusation had been disallowed by the committee, the report was reviewed by the house; and after some debates on the mode of proceeding, it was resolved that the question should be put separately on sixteen points. The greatest number of peers who voted the defendant guilty in any one respect did not exceed six, whilst the votes of not guilty on some of the charges were twenty-six, in others twenty-three, and in one nineteen. The lord chancellor then intimated the decision of the court to Mr Hastings, who received it in silence, and withdrew.

At this time the debts of the Prince of Wales amounted to L.630,000; but it had been arranged at court that these debts should be paid, and that the prince should marry his cousin, the daughter of the Duke of Brunswick; and after some discussion in the House of Commons, his establishment was fixed at L.125,000, out of which he was required to pay L.65,000 a year until his debts were liquidated. The rents of the duchy of Cornwall, amounting to L.13,000, were also set apart for the extinction of the debts; and further sums were voted to defray the expenses of the marriage, as well as the repairs and decorations of Carlton House.

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Parliament was prorogued on the 27th of June by a speech from the throne, in which ministers thought it prudent to hold out to the public some prospect of negotiation.

The incidents of the war during the year 1795 were less memorable than those of the preceding years. Lord Bridport, with an inferior force, attacked a French fleet near Port l'Orient, and took three of their ships. Vice-admiral Hotham pursued to the Genoese coast a fleet which had sailed from Toulon to attempt the recovery of Corsica, and had captured one of his detached ships; and having brought the enemy to a partial engagement, he took two sail of the line; but he afterwards lost one of his own ships in consequence of damage sustained in the conflict. On the western coast of France, the enemy, with thirteen sail of the line and fourteen frigates, avoided coming to an engagement with Vice-admiral Cornwallis, who had only eight ships including frigates. These events occurred early in summer. But notwithstanding the vigilance of the British navy, the French captured, in the month of July, thirty sail of a valuable convoy returning from the Mediterranean, and also made prize of part of a Jamaica fleet; but, on the other hand, their own commerce had sunk so low as to present few objects of attack to our cruisers and privateers.

As the Dutch, though nominally the allies of the French, had, in fact, become subject to them, letters of marque were issued against them by Great Britain, and directions given to seize their colonial territories, under the professed intention, however, of restoring them when the stadtholder's government should be re-established. The Cape of Good Hope was taken, together with Trincomalee and the other Asiatic settlements of the Dutch, excepting only Batavia. Their territories in the West Indies were not attacked during the present year, on account of the difficulties which the British experienced in that quarter in keeping in subjection the islands captured from the French, where various insurrections were incited by their ancient masters. Jamaica was also kept in a state of great alarm by a small tribe of independent negroes, called Maroons, who had long existed in the mountainous parts of the island. These people, having quarrelled with the white inhabitants, committed many cruel ravages, and were not subdued till Spanish hunters and blood-hounds were procured from the island of Cuba, and employed against them, which induced them at last to submit to deportation from the island.

The British ministry resolved, when it was too late, to give assistance to the royalists in the western parts of France; and an expedition, planned by Mr Windham, and guided by French emigrant officers, with troops, many of whom consisted of prisoners of war, relieved from confinement on condition of bearing arms against their native country, set sail for the French coast, and landed upon the extremity of the narrow peninsula of Quiberon. Here they fortified themselves; but many of the troops proving unfaithful, and the expedition being otherwise ill conducted, they were speedily overpowered by the republicans, who put to death such of their countrymen as they found in arms fighting against them. By this feeble and ill-timed invasion of the French territory, nearly ten thousand men were killed or taken prisoners.

The continental campaign on the side of Germany was of little importance during this year, but upon the whole it proved unfavourable to the French. The convention had shaken off the yoke of that sanguinary faction which, under Robespierre and his frantic associates, had deluged the interior of France with blood, but had nevertheless the merit of calling forth with astonishing energy the powers of the country for the support of its independence. The present leaders possessing less activity, and affecting a

milder course of conduct, the military operations languished; and the French army remained inactive till autumn, when it crossed the Rhine near Mentz under General Pichegru, but was speedily repulsed, and an armistice concluded for the winter. The convention, however, established a new form of government, consisting of an executive directory of five persons, elected by two representative bodies, to which the powers of legislation were intrusted; and it was expected, that if the war continued, the new executive power would endeavour to distinguish itself by some important operations.

The British parliament was again assembled at an early period, namely, on the 29th of October. The state of public affairs wore at this period an unfavourable aspect. The French armies had been inactive during the summer, but they had lost nothing; for the new republic retained possession of the territory extending from the Pyrenees to North Holland, and consequently of an immense length of coast opposite to Great Britain. Meanwhile, a dearth of provisions began to prevail at home. The winter, which had set in with extreme severity at the close of the year 1794, and had enabled the French to conquer Holland with little difficulty, was followed by an ungenial summer, during which the crop failed in consequence of almost incessant rains. This state of things was productive of discontent among the lower orders, and the war was blamed as tending to aggravate the distress which they thus suffered. Previous to the assembling of parliament some meetings were held by the London Corresponding Society, for the purpose of petitioning the king and parliament in favour of peace and of parliamentary reform; and as the meetings were held in the open fields, they were very numerously attended, but the persons composing them dispersed without disturbance. At the opening of parliament, however, some riots took place.

His majesty proceeded from the palace to open the session of parliament at the usual hour; and the crowd in St James's Park, which is always considerable on these occasions, was certainly much greater than usual. A fine day, and a rumour which had been circulated that a riot was likely to take place, contributed greatly to increase the multitude of the spectators. As the royal carriage passed along the park, the predominant exclamations uttered were "Peace, peace! Give us bread: No Pitt; no famine; no war!" and a few voices were heard to exclaim, "Down with George," or words to that effect. In the park and the streets adjacent to Westminster, stones and other missiles were thrown, some of which struck the state coach, and one of them, supposed to have been thrown from a house in Margaret Street, perforated a window of the carriage by a small circular aperture. From this circumstance it was alleged to have been a bullet discharged by an air-gun, or by some similar engine; but no bullet was found; and happily it neither touched the king nor the noblemen who attended him. As his majesty returned from the house through the park, the gates of the horseguards were shut to exclude the mob; yet even this precaution was not sufficient to prevent a renewal of the outrages, and another stone was thrown at the carriage as it passed opposite to Spring Garden Terrace. After the king had alighted at St James's, the populace attacked the state-carriage, and, in its way through Pall-mall to the Mews, it was almost entirely demolished. The speech from the throne stated that the general situation of affairs, notwithstanding many events unfavourable to the common cause, was materially improved; that the French had been driven back in Italy, and checked on the side of Germany; that their successes, and the treaties of peace which they had entered into, were far from compensating the evils they had suffered from the continuance of war;

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of that the unparalleled embarrassment and distress of their internal situation had produced an impression that their only relief must result from peace and a settled government; that the crisis in which they now were must probably produce consequences important to the interests of Europe; and that if this crisis terminated in any thing affording a reasonable expectation of security in any treaty, the appearance of a disposition to treat for peace on just and suitable terms would be met, on the part of the British government, with an earnest desire to give it the speediest effect. In the speeches for and against the usual addresses little novelty occurred, the expediency of continuing the war having been so often discussed before.

Meanwhile administration took advantage of the attack upon his majesty's person to issue a proclamation, connecting the meetings of the Corresponding Society with the insults offered to his majesty, and also to bring forward two new penal statutes. The first was introduced into the House of Lords by Lord Grenville, and entitled an act for the preservation of his majesty's person and government against treasonable and seditious practices. One clause enacted capital punishment against every one who should express, utter, or declare, by the publication of writings, or by any overt act, such imaginations, devices, or intentions, as were calculated to injure the king, impair his authority or that of the parliament, or promote an invasion of his dominions; another provided, that all declarations tending to excite hatred or contempt of the king should be considered as high misdemeanours; and a third, that a second offence might be punished, either in the ordinary mode, or by banishment from the realm for a term not exceeding seven years. The other bill, introduced by Mr Pitt into the House of Commons, provided, that no meeting of any description of persons, exceeding the number of fifty, except such as might be called by sheriffs or other officers or magistrates, should be holden for political purposes, unless public notice had been previously given by seven housekeepers; that if such a body should assemble without notice, and twelve or more individuals should continue together, even quietly, for one hour after a legal order for their departure, they should be punished as felons, without benefit of clergy; and that the same rigour might be exercised, if any person, after due notice of the meeting, should use seditious language, or propose the irregular alteration of any thing by law established. With regard to the delivery of lectures or discourses, or the exercise of debate on topics connected with the laws and government of the country, a license was declared to be necessary. Very animated discussions took place upon these bills in both houses of parliament, and many petitions were presented against them; whilst, on the other hand, various corporations and public bodies petitioned for their enactment. But the result nevertheless was, that the bills were passed by great majorities.

Still, however, administration were sensible that it would become necessary, for the sake of preserving their popularity, to assume an appearance of willingness to put an end to the war; and accordingly, whilst the bills were under discussion, each house received a message from the king, in which, alluding to the new constitution, and the directorial government of France, he stated that such an order of things had arisen as would induce him to meet any desire of negotiation on the part of the enemy with a full readiness to give it the speediest effect. An address of thanks having been moved, Mr Sheridan suggested an amendment, tending to promote immediate negotiation, and to remove all obstacles to the attainment of peace; and Mr Fox also wished that the first advances should proceed from our court; but Mr Pitt and Mr Dundas thought it advisable to wait until the enemy manifested a disposi-

tion to negotiate. Similar observations were made in the House of Peers. A species of advance towards negotiation was nevertheless made soon afterwards on the part of Britain, though in a very oblique and indirect mode. Mr Wickham, his majesty's minister to the Swiss cantons, transmitted, on the 8th of March 1796, a note to M. Barthélemy, the French ambassador at Berne, stating that he himself was not authorized to enter into any negotiation, but requesting information in writing on the part of the French court about three points; first, whether France was disposed to send ministers to a congress to negotiate a general peace with his Britannic majesty and his allies; secondly, whether the French government were willing to state the general grounds upon which they would consent to conclude a treaty; and, thirdly, whether the French government would think fit to propose any other mode of arriving at a general pacification. M. Barthélemy returned an answer on the 26th of the same month, stating that the executive directory doubted the sincerity of these overtures of peace, from the proposal of a general congress, which would lead to endless negotiations, and from Mr Wickham not having received powers to negotiate; asserting the willingness of France to make peace; but declaring that the executive directory had no power to relinquish any of the territories which the constitutional act had declared to form an integral part of the French republic. With regard to the other territories occupied by the French armies, these might become objects of negotiation. But as the Netherlands and the island of St Domingo had been declared by the new French constitution to form part of the territory of the republic, the British government immediately published a note intimating that these pretensions on the part of France were totally inadmissible; and that while they were persisted in, nothing was left but to prosecute a war equally just and necessary. This first attempt towards negotiation for peace gave rise to various debates in the British parliament, in all of which administration were supported by their usual majorities.

Supplies were voted during this session to the amount of L.37,588,000, and upwards of twenty-five millions and a half were borrowed. As no prospect existed that British armies could be employed on the Continent, the guards and garrisons were reduced to forty-nine thousand men; the forces in the colonies were increased to seventy-seven thousand; and the sailors and marines amounted to a hundred and ten thousand. Taxes were imposed on legacies to collateral relations, and on horses, and dogs, and hats; the assessed taxes were increased, and also the duties on wine, tobacco, salt, and sugar. Parliament was dissolved on the 20th of May, and new elections immediately took place.

An extremely active campaign was now opened by the French upon the Continent. Their generals, Moreau and Jourdan, penetrated into Germany; but they were ultimately repulsed by the Archduke Charles, though not till they had reached the vicinity of Ratisbon. The retreat of Moreau, amidst hostile armies, and through the difficulties and entanglements of the Black Forest, formed one of the principal events of the war, and has been much lauded by some military writers, though severely criticised by Napoleon. On the side of Italy the French obtained greater success. Their new general in that quarter, Bonaparte, turned the Alps by the Col di Tende, and gaining in rapid succession the victories at Montenotte, Millesimo, and Dego, compelled the king of Sardinia to desert the allies, and to purchase peace at the expense of a considerable portion of his territory. He next descended into the Milanese; obliged the Italian states to surrender their finest paintings, statues, and other curiosities, together with large sums of money, as the price of peace; and after a

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multitude of sanguinary conflicts at Lodi, Arcole, Lonato, Castiglione, Rivoli, and other places, he succeeded in subduing, by famine, Mantua, the only fortress that remained to the Austrians in Italy. Few maritime events of much importance occurred. The Dutch were deprived of their whole intertropical possessions, with the exception of the unhealthy but rich settlement of Batavia, in the island of Java; and they also lost a squadron which they had sent out to attempt the re-capture of the Cape of Good Hope, but which was itself made prize of by the British admiral Sir George Elphinstone, afterwards Lord Keith. On the other hand, the British were under the necessity of abandoning Corsica, in consequence of the conquests of Bonaparte in Italy, and the mutinous spirit of his countrymen the Corsicans. The result of the campaign was, that the British ministry, in order to appease the nation, found it necessary to send Lord Malmesbury to Paris on the pretence of attempting to negotiate a peace; but it was afterwards admitted by Mr Pitt that they had no wish to conclude a treaty, and that the measure was adopted merely in compliance with the wishes of the public. Accordingly, as the French still refused to relinquish their hold of the Netherlands, this was accounted a sufficient reason for persevering in the war.

In the early part of the session of parliament, which met on the 6th of October, there occurred few debates, on account of the intention to attempt an immediate negotiation, which had been announced in the king's speech, and afterwards from expectation of its issue. But at the close of the year the French directory, in consequence of an invitation from a disaffected party in Ireland, sent an expedition of seventeen ships of the line and many smaller vessels, having on board an army of eighteen thousand men under General Hoche, to invade that country. The violence of the weather prevented this armament from assembling at the rendezvous in Bantry Bay, and no landing was in consequence attempted; so that the fleet returned home with the loss of two ships of the line and two frigates, which perished in a tempest, and of one frigate taken by the English. Shortly afterwards the French disembarked on the coast of Pembrokeshire twelve hundred and fifty criminals, whom they had sent as soldiers upon the Irish expedition, and knew not how to dispose of after the failure of that attempt.

At this period the first instance of serious difficulty occurred in the management of the British funding system. The large sums of money sent abroad as subsidies to foreign princes by government had diminished the quantity of gold and silver in Great Britain, whilst administration, through the medium of the Bank of England's paper, had issued immense sums for the public expenses, and in payment of the additional interest of the national debt. The alarm occasioned by the Irish invasion coming in addition to these circumstances, produced a run upon the bank to exchange its paper for specie; and as their coffers were soon drained, they found themselves under the necessity of giving a premium for bullion, which they paid with their paper. This made matters worse, as certain persons secretly melted down the guineas which the bank had caused to be coined and issued, and sold the gold to the bank as bullion for the sake of the premium. A ruinous traffic was thus carried on by the bank, which purchased bullion at a high rate, while they gave out their guineas at par. The directors, therefore, were under the necessity of laying their case before the privy council, which, after considering the circumstances of the case, issued an order authorizing the bank to discontinue the payment of their notes in cash. Considerable alarm was occasioned by this step; and committees of both houses of parliament were appointed to inquire into the state of the bank's affairs.

But although these were reported as prosperous, yet each committee recommended a continuance of the restriction; and an act was therefore passed for confirming it, while, to render it less inconvenient, bank notes for one and two pounds were put into circulation. As the bank of England is the medium through which the British government issues all payments, and as these payments were made in the bank's paper, which administration might induce the directors to augment indefinitely, many persons feared and predicted that this paper would speedily sink in value when compared with gold and silver, as the French assignats and the American paper currency had done when rendered inconvertible at pleasure into specie. The stability of the British funding system, however, speedily displayed itself. The credit of the bank's paper remained unshaken, because government received it in payment of all taxes; and although depreciation soon followed, and prices necessarily rose, yet, from confidence in our resources, and a conviction of the immutability of the national faith, this depreciation was confined within narrower limits than it would have reached in other countries not so favourably circumstanced, and the credit of the paper continued unaffected by an operation which would have utterly ruined it anywhere else.

During the preceding year the emperor had received a subsidy, under the name of a loan, from the British government, and a new subsidy was now given him under a similar denomination. To supply this and the rest of the national expenses, £27,647,000 were voted early in the session, and afterwards above fifteen millions additional were thought necessary, and voted. Two loans were negotiated by government; one of sixteen millions and a half, in the usual way, from money-brokers; and another of eighteen millions, called the Loyalty Loan, from the nobility and gentry being requested to fill it up, which they did with great eagerness. The troops voted consisted of a hundred and twenty thousand seamen; sixty thousand seven hundred and sixty-five soldiers for European service, and above sixty-four thousand for the dependencies of Great Britain. As the threat of invasion was now revived, a large supplementary body of militia was levied, together with a considerable force consisting of cavalry. The interest of the two loans was provided for by taxes upon houses, stage-coaches, horses, auctions, stamps on agreements and newspapers, ornamental plate, spirits, tea, coffee, and other articles. Towards the close of the session the opposition brought forward motions to address the king to dismiss his ministers, resume the negotiation with France, and repeal the two acts introduced in the preceding session, by Lord Grenville and Mr Pitt, for extending the treason laws, and imposing restrictions upon popular meetings for political purposes. They were encouraged by a variety of addresses which were presented to his majesty at this time from different parts of the country, advising him to dismiss the present ministry; but, as usual, their efforts proved unavailing.

The French had now acquired such an ascendancy over the Spanish monarchy, as to induce the government of that country to declare war against Britain; and soon afterwards the Spanish fleet, amounting to twenty-seven sail of the line, attempted to join a French armament; but they were attacked by Sir John Jervis on the 14th of February, near Cape St Vincent, with only fifteen sail of the line; and four of their ships, of from seventy-four to a hundred and twelve guns, were made prizes by the British fleet. This victory may be regarded as the first of that mighty series of naval triumphs with which the name of Nelson is indissolubly associated. The British force consisted of two ships of a hundred guns, two of ninety-eight, two of ninety, eight of seventy-four, and one of

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morning was now coming up, Sir John Jervis made signal to bring to. If the enemy had chosen at this moment to avail themselves of their great superiority of force, the situation of the British admiral would have been most critical. His ships could not have formed without abandoning those which they had captured, and running to leeward; the Captain was lying a perfect wreck on board her two prizes, with her fore-topmast shot away, and not a sail, shroud, or rope left, while her wheel was smashed; and many of the other ships were so shattered in their masts and rigging as to be wholly unmanageable. But the Spanish admiral, Don Josef de Cordova, having inquired of his captains whether they judged it proper to renew the action, and nine having answered in the negative, whilst others gave their opinion in favour of delay, abandoned all idea of recommencing the battle, and drew off, leaving the British in possession of the prizes which they had so gallantly won. For this victory the commander-in-chief was rewarded with the title of Earl St Vincent, and Rear-admiral Nelson had the order of the Bath given him. It was his skilful and daring disobedience of orders which rendered the battle decisive.

At the commencement of the summer an event occurred which, had the French been prepared to attempt an invasion of this country, might have been productive of serious evils. This was a mutiny in the fleet. Gross impositions had for some time been practised upon the seamen, both as to the quantity and quality of the provisions allowed them; and they had made an anonymous application for redress to Earl Howe. But the application was disregarded, because the strictness of discipline prevented the open avowal or appearance of discontent, which his lordship inconsiderately supposed had no existence; and the seamen, disappointed of the expected relief, resolved to enforce the consideration of their claims. Accordingly, when orders were given to prepare for putting to sea, the crew of the Queen Charlotte, and other ships lying at Spithead, refused to act; and treating with contempt the remonstrances of the officers, they made choice of delegates, who after a formal consultation drew up petitions to the board of admiralty and the House of Commons. Earl Spencer, first lord of the admiralty, dreading a dangerous mutiny, and not thinking the demands of the seamen unreasonable, promised compliance; and the king readily offered full pardon to all who should immediately return to their duty. But the seamen would not be satisfied till the parliament had confirmed the promises of the admiralty; and as some delay thus ensued, the irritation of their minds led to a contest with Vice-admiral Colpoys, in which some lives were lost. An act, however, was passed for the gratification of the seamen in point both of pay and provisions; and subordination was restored at Spithead and Plymouth. The concession of these claims encouraged the seamen at the Nore to insist on a more punctual discharge of arrears, a more equal distribution of prize-money, and a general abatement of the severity of discipline. A council of delegates was elected, at the head of which was a seaman named Richard Parker, who took the command of the fleet, and prevailed upon the men to reject repeated offers of pardon. He robbed two merchant ships of provisions, obstructed trade by the detention of other vessels, and fired on some ships of war which refused to accede to the mutinous combination. An act of parliament was passed in the beginning of June, denouncing capital punishment against all who should hold intercourse with the rebellious ships, or voluntarily continue on board; and as the public strongly disapproved of this last mutiny, for which no excuse could be offered, the seamen gradually returned to their duty. Parker was apprehended, and, along with several other mutineers, punished with death; and a

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considerable number were also condemned after trial, but the greater part of them were pardoned.

During the summer the port of Cadiz was blockaded by the British fleet under Sir John Jervis, now Earl St Vincent; and an attempt was made against the Spanish island of Teneriffe, but without success. Meanwhile another fleet under Admiral Duncan watched the Texel; but the blockading force having retired for a short time, the Dutch fleet, under Admiral De Winter, put to sea. Intelligence of this event having been brought to Admiral Duncan at Yarmouth, he instantly proceeded in quest of the enemy; and about eleven o'clock in the forenoon of the 11th October 1797 he got sight of the squadron which had been left to watch their motions, and which displayed signals of an enemy to leeward. Admiral Duncan immediately made signal for a general chase, and soon got sight of the Dutch, forming in a line on the star-board tack to receive him, the land between Camperdown and Egmont being then about nine miles to the leeward. On making this discovery, he shortened sail to connect the squadron; and finding there was no time to be lost in making the attack, he made signal to bear up, break the enemy's line, and engage each ship her opponent to leeward, without waiting to form the line of battle. The order was promptly and gallantly obeyed; Vice-admiral Onslow, in the *Monarch*, bore down on the enemy's rear, his division following his example; and about forty minutes past twelve o'clock the battle commenced. Admiral Duncan, in the *Venerable*, also passed through the enemy's line, at the head of his division, and began a close action with the enemy's van, which lasted two hours and a half, when all the masts of the Dutch admiral's ship were observed to go by the board, and she not long afterwards struck to her opponent. The Dutch vice-admiral's ship being also dismasted, surrendered to Vice-admiral Onslow, and nine others became the prizes of the conquerors. The battle was obstinate and sanguinary; but its decisive results may be ascribed to the bold manœuvre of instantly pushing between the enemy and the land, to which they were fast approaching. Had Admiral Duncan waited to form line of battle, in the ordinary way, there either would have been no action at all, or if the British had attacked, the Dutch admiral, by getting nearer to the shore, would probably have drawn both fleets on it, which would have been a victory to him. The force on both sides was nearly equal, each squadron consisting of sixteen ships of two decks; but of the British not more than ten ships were seriously engaged, and these captured eleven of the enemy. Had Admiral Duncan's fleet been composed of the same materials as Lord St Vincent's, every Dutch ship would have been taken; and the same result would have followed had all the ships followed the example set them by the *Venerable*. The fact is, however, that the British squadron was composed of very indifferent and inadequate vessels, many of them having been intended for Indiamen; and that it was otherwise in many respects ill conditioned and deficient; but there was no want of gallantry on the part of the crews, and when the main-top-gallant mast of the *Venerable* was shot

away, a seaman of the name of Crawford nailed the flag to the top-mast head.¹ This victory excited the most lively joy in the British nation, from its tendency to put an end to all dread of invasion.

While their allies, or rather subjects, were suffering these disasters by sea, the French armies triumphed on the Continent. Bonaparte advanced from Italy against the centre of the Austrian dominions, and, after several sanguinary conflicts, crossed the Alps where they approach the frontiers of Hungary, and forced the emperor to conclude preliminaries of peace at Leoben, on the 18th of April, which were followed by a definitive treaty, signed at Campo Formio, near Udine, on the 17th of October. The emperor acquired the city of Venice; but he relinquished the Milanese and the Netherlands, and, by secret articles, consented that the Rhine should form the boundary of France. Britain being now left alone in the contest into which she had originally entered as an auxiliary to Austria and Prussia, the government opened a negotiation towards the close of the summer; and as both the French and British nations eagerly wished for a termination of this sanguinary contest, it is probable that administration seriously wished to conclude a treaty; but at this time a party, headed by the director Barras, had gained the ascendancy in France, and resolved to continue the war. A demand was therefore made that Britain should renounce every conquest as a preliminary to negotiation, whilst France reserved a right to make further demands; and on this being refused, the British ambassador, Lord Malmesbury, was dismissed from Lisle, where the negotiations had been opened.

Parliament assembled on the 2d of November. In the speech from the throne his majesty stated his concern that his endeavours to restore peace had been rendered ineffectual, and expressed the fullest reliance on the magnanimity and courage of the people. During this session of parliament few or none of the members of opposition attended. At the close of the preceding session they had declared it to be their intention to retire from parliament; and they justified their conduct by alleging that, in times when every man who censured the measures of administration was regarded as in league with the enemy, it was equally painful and useless to incur such odium; that if they declared their sentiments, they were proclaimed as the enemies of the king, and if they tacitly acquiesced in the measures of the minister, they voluntarily took upon themselves a share of the responsibility; that they had done their utmost to prevent the war, and had urged repeatedly the necessity of bringing it to a speedy termination, without persuading their opponents; that events must now take their natural course; and that as they could not aid by their counsel, it should not be said that they embarrassed by their opposition. This retirement of opposition was much resented, and spoken of with great bitterness, by the friends of administration, as it suggested to the nation the idea that government was conducted by the power of the crown alone, unchecked by any discussion of its measures in the two legislative assemblies.

The inability of the bank of England to pay upon demand its notes in specie, according to ancient custom and

¹ The following characteristic anecdote has been related of an officer who distinguished himself by his gallantry in this action. Captain Inglis of the *Belliqueux* of sixty-four guns, owing either to long absence from the service, or to an inaptitude not very uncommon among naval officers of the old school, had neglected to make himself master of the signal-book; and on the morning of the day of battle, when it became necessary to act with promptitude, in obedience to the signals, he found himself more puzzled than enlightened by it. After poring over it for some time, without being in any degree benefited by the perusal, he threw it with contempt upon the deck, exclaiming in broad Scotch, "Damn me, up wi' the hellem and gang into the middle o't." These words are instinct with the true spirit of battle, and show that Captain Inglis bravely anticipated the remedy in such cases provided by Nelson, who, in his celebrated memorandum on the eve of the mighty combat of Trafalgar, observes, that "if a captain should be at a loss, he cannot do very wrong if he lay his ship alongside of the enemy." In strict conformity with this doctrine, the *Belliqueux* lost no time in "ganging into the middle o't," by attacking the enemy's van, which she contributed to throw into confusion, although she got rather roughly treated by them before she could be supported.

of the terms of the obligation contained in these notes, appears now to have created in Mr Pitt's mind some dread respecting the funding system, and an apprehension, that from the immense sums annually borrowed, and the corresponding quantity of paper-money necessarily issued to pay the interest of the loans, the system might be carried so far as to discredit the paper-money issued in the name of the bank of England. And this apprehension was strengthened by a fact, of which everybody was daily becoming more sensible, namely, that the money price of all kinds of property in Great Britain had rapidly risen during the war; and this rise of price was justly ascribed to a gradual sinking in the value of money, or of paper, the only money used in Britain, in consequence of its too great abundance. Mr Pitt therefore proposed, instead of borrowing the whole sum necessary to defray the expense of the war, and imposing no more taxes than were requisite to pay the interest of the loan, that heavier taxes should be imposed, in order to defray a portion of the extraordinary expenditure. Accordingly an act was passed for raising seven millions within the year; and this was to be effected by augmenting the assessed taxes, but so as not to compel any individual to pay more than one tenth of his income. The leading members of opposition attended to oppose this extraordinary measure, but without effect.

As the French were now disencumbered of all other adversaries, it was naturally expected that they would turn their arms in a more direct manner than formerly against the British empire. The result of the combination of the states of Europe for the partition of France had been extremely disastrous, and had left the new republic in possession of an extent of territory which the ablest and most ambitious of the French monarchs had in vain aspired to possess. The command which they had now obtained of Holland rendered France more dangerous than formerly, by the superior means of invasion which an additional extent of coast and the possession of a large quantity of shipping might afford; and had the French navy been less weak, or the French rulers possessed of greater ability, a dangerous crisis in the history of Great Britain might at this period have occurred. It never was the interest of any British administration to conceal from the public at large the possibility of a foreign invasion; and as the French government at this time boasted of their intention to make such an attempt, and ordered a considerable army to advance to the sea coast, it became the duty of ministers in Great Britain to make preparations to resist any such effort. Accordingly they came forward in parliament to propose measures of defence; and the danger with which the nation considered itself as threatened obliged all men in some measure still to adhere to an administration which in other respects might have lost their popularity from the ill success of their late measures. On the 8th of February 1798 Mr Dundas introduced into the House of Commons a bill to enable the king to incorporate in the regular militia a portion of the supplementary militia. And this bill being passed with little debate, the same minister, on the 27th of March, moved for leave to bring in another, to enable his majesty to provide for the security and defence of these realms, and to indemnify persons who might suffer injury in their property by the operation of such measures. The object of this bill was to provide for every possible emergency, by giving a power to his majesty to discover what persons were prepared to appear in arms and to be embodied for the public defence; and also to ascertain what number of the inhabitants of certain districts would be able to act as pioneers, or in other laborious situations. The other provisions were, that in the event of its being necessary to employ persons as pioneers to remove stock, or assist in facilitating the carriage of

military stores, proper compensation would be made; and the bill was also intended to give a power of embodying a portion of the regular militia, and employing them in the defence of the country. This bill was passed into a law after some unimportant debates, the principal members of opposition not usually attending.

As it was supposed that the war, on the part of Britain, would occasion greater expense than when all Europe had been engaged in it along with her, the supplies were augmented to £35,000,000; and, with a view to draw resources from distant parts of the country, instead of raising large loans for the public service, which were negotiated in London alone, Mr Pitt brought forward a scheme by which proprietors of land were enabled to redeem the land-tax; in other words, the owner of land, and, failing him, any other person, was to be permitted to purchase this tax, by a transfer of stock, which produced a dividend greater than the amount of the impost. The measure became law, but produced little immediate effect.

On the 25th of May Mr Pitt brought forward a bill in the House of Commons, with a view to increase the navy, and to resist with greater success the threatened invasion. On this occasion an event occurred, which indicated, that by the long possession of power, and the support he had received from the nation, Mr Pitt had suffered to grow upon him a certain haughtiness of manner and impatience of contradiction, which, in former times, would have proved extremely inconvenient to a British minister. On the subject of his proposed bill, he observed, that the object he had in view was to suspend, for a limited time, the protections which various descriptions of persons enjoyed, to prevent them from being impressed into the service of the navy; and he stated it as his wish that the bill should that day pass through its different stages, with a suitable pause at each if required, and that it should be sent to the Lords for their concurrence. Mr Tierney remarked on the very extraordinary manner in which Mr Pitt called upon the house to adopt this measure. He had imagined that the augmentation of the navy was to be provided for in the usual way; or, if any very uncommon mode was to be resorted to for the attainment of that object, that notice would have been given to the house. He had heard no arguments that proved its propriety; and even if he had, some time ought to have been allowed to weigh the force of such arguments, before proceeding to give three or four votes on a measure, of which no notice of any kind had been given. If the ministers persisted in hurrying the bill through the house in the manner proposed, he must give it a decided negative; and, indeed, from what he had already seen, he must view all their measures as hostile to the liberties of the subjects of this country. Mr Pitt replied, that if every measure adopted against the designs of France was to be considered as hostile to the liberty of this country, then indeed his idea of liberty differed widely from that of the honourable gentleman. He observed that he had given notice before of the present motion, and that if it were not passed in a day, those whom it concerned might elude its effects. But if the measure was necessary, and if a notice of it would enable its effects to be eluded, how could the honourable gentleman's opposition be accounted for, except from a desire to obstruct the defence of the country? Mr Tierney called Mr Pitt to order; and the Speaker observed, that whatever had a tendency to throw suspicion on the sentiments of a member, if conveyed in language that clearly marked that intention, was certainly irregular. Mr Pitt replied, that if the house waited for his explanation, he feared it must wait a long time. He knew very well that it was unparliamentary to state the motives that actuated the opinions of gentlemen; but it was impossible to go into arguments in favour of a

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question, without sometimes hinting at the motives that induced an opposition to it. He submitted to the judgment of the house the propriety of what he argued; and he would not depart from any thing he had advanced, by either retracting or explaining it. The result of this altercation was a duel on the following Sunday between Mr Pitt and Mr Tierney. They went to Putney Heath, attended by seconds, and, standing at the distance of twelve paces, fired two shots each; but Mr Pitt discharged his second pistol in the air, upon which the seconds interfered, and thus the affair terminated.

During the summer of this year a rebellion broke out in Ireland, the particulars of which will be stated in their proper place. The enthusiasm which the French revolution had kindled in so many quarters of Europe extended itself to Ireland. There, some men of ardent imaginations, chiefly Protestant dissenters, persuaded themselves that they could regenerate their country, cast off the dominion of Great Britain, heal the unhappy divisions among the inhabitants of Ireland, and convert it into an independent republic. As early as the year 1793 these persons formed themselves into a society, under the name of the United Irishmen, and were gradually joined by a very large proportion of the population of the country. They applied for aid from France; and it was in consequence of their urgent invitation that the unsuccessful expedition under General Hoche was undertaken. From that period the country remained in a state of the greatest alarm. On the one side rigorous laws were enacted, and every effort was made, by severity of punishment, to repress all appearance of opposition to the existing government; whilst, on the other, the common people busied themselves in the fabrication and concealment of pikes, or broke into the houses of country gentlemen, to seize whatever fire-arms they could discover. The schemes of the disaffected party were greatly disconcerted by the discovery and apprehension of their principal leaders. A rebellion, however, actually broke out; but, though attended with considerable destruction of human lives and of property, it was of a partial nature, and speedily suppressed. During its existence some circumstances occurred which completely demonstrated of how visionary a nature had been the schemes of those persons who hoped to establish in Ireland an independent government upon any basis that could afford a tolerable hope of national prosperity. The disaffected party among the Protestants, too weak to be able of themselves either to shake off the dominion of Great Britain, or to assume the ascendancy in Ireland, were under the necessity of calling in the aid of the Roman Catholics, who constitute the great mass of Irish population; and they were the more readily induced to do so, from a notion, which of late years had very generally gained ground in Europe, that religious sentiments form no proper ground of distinction in civil society, and from perceiving the facility with which the Catholics of France had set at defiance the religion of their fathers, when placed in competition with what they accounted the interests of freedom, or the means of aggrandisement to their country. But it speedily appeared that these new maxims of conduct could not be adopted by the superstitious and illiterate peasantry of Ireland. The Catholics were no sooner in arms than their chief animosity came to be directed, not against the dominion of Britain, nor against any form of civil government, but against their own countrymen of the Protestant faith, who must thus ultimately have fallen a sacrifice to the success of their own schemes. In short, it became evident that Ireland could not possibly exist in tranquillity, or with safety to the Protestant part of its inhabitants, independent of the supremacy of Great Britain.

Upon the Continent, the world was amused with a ne-

gociation carried on at Rastadt, between the French directory and the German empire. It was conducted with much slowness, and ultimately proved ineffectual. But whilst it was in progress, the French government, having contrived to quarrel with the Swiss cantons, invaded and seized their country, and converted it into a new republic, under their own influence. Austria, however, had been so much humbled by recent losses, that she did not venture, on this occasion, to assert the independence of Switzerland, although it must have been evident that her own independence was ultimately connected with that object. Switzerland consists of a vast assemblage of lofty and precipitous mountains, situated in such a manner as to divide the most important countries of Europe from each other. On one side these mountains look down upon the fertile territory of Italy; to the north they command the very centre of Germany; and to the west they are bounded by France. For ages they have been inhabited by a virtuous and fearless race of people, divided into petty communities, who contented themselves with maintaining their own independence; and though, as individuals, they entered into the military service of the neighbouring princes, yet, as a people, they had long ceased to take any part in the wars of Europe. For some centuries the independence of Switzerland proved the chief basis of the independence of the neighbouring nations. All parties respected and avoided any dispute with the Swiss, in a war against whom much might be lost, but nothing could be won. Accordingly, when the French attacked the Austrians, and when the Austrians attacked the French, the assailing party was under the necessity of sending its armies to a great distance from the centre of its own power. If defeated, the march homewards was long and difficult; whilst, even if tolerably successful, the attack never proved seriously dangerous, in consequence of its having been made in a remote quarter with limited means. Hence, in 1796, when the French generals Moreau and Jourdan marched through Suabia and Franconia to invade Austria, the length of their march afforded many opportunities of attacking them with success; and the invaded country had full leisure to call forth its whole resources against them. The result was, that when Jourdan sustained a defeat, the retreat of the other army became almost impracticable; and hence arose the unbounded reputation acquired by Moreau for accomplishing it with success. Had the French at that period occupied Switzerland, the retreat of Moreau would have been attended with little or no difficulty; because, by retiring into that rugged country, he could easily have made a stand against a very superior force for a considerable time, till he had received reinforcements. For the future, therefore, by commencing a war of invasion against Austria, not upon the frontiers contiguous to France, but at the eastern extremity of the Swiss mountains, the French, if successful, might reach the gates of Vienna in a few weeks. The independence of Switzerland, by placing these nations at a distance from each other, had hitherto prevented such an enterprise from being carried into effect; and the present removal of that barrier by the French directory, during a period of peace with Austria, displayed, upon their part, a correct knowledge of the cause which had at all times set bounds to the ambition of France, and at the same time evinced a determined spirit of hostility against the independence of the surrounding states.

Meanwhile the weakness of the French navy rendered it impossible for them to engage in any serious attack against the European part of the British empire. The French government, however, with the double view of attacking the rich empire which Britain had acquired in Asia, and of removing a successful military chief, whose ambition was already accounted dangerous, formed a de-

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Why Bonaparte, having effected a landing in Egypt, should not have suffered the fleet to return, has never been explained. He accused Admiral Brueys, after that officer's death, of having lingered on the coast, contrary to orders; and the same charge is repeated in the memoirs which he transmitted from the place of his exile. But it is scarcely credible that any officer, situated as Brueys was, would have incurred the heavy responsibility which such disobedience incurs; and the more probable supposition therefore seems to be, that the fleet was detained by Bonaparte's orders. It arrived at Alexandria on the first of July; and Brueys, not being able to enter the port which time had ruined, moored his ships in Aboukir Bay, in a strong and compact line of battle; the headmost vessel being close to the shoal on the north-west of the bay, and the rest of the fleet forming a curve along the line of deep water, so as not to be turned by any means in the south-west. He had in fact made the best of his situation, and chosen the strongest position which he could possibly take in an open roadstead; so much so, indeed, that the commissary of the fleet thought they were moored in such a manner as to bid defiance to a force double their own. Besides, the advantage of numbers, in ships, guns, and men, was in favour of the French. They had thirteen ships of the line and four frigates, carrying eleven hundred and ninety-six guns, and eleven thousand two hundred and thirty men. The English had the same number of ships of the line, and one fifty-gun ship, the *Leander*, carrying only a thousand and twelve guns, and eight thousand and eighty-six men. The French had one three-decker of a hundred and twenty guns, and three eighty-gun ships; whilst the English ships were all seventy-fours. The moment Nelson perceived the position of the enemy, his intuitive genius suggested to him the decisive conception, that where there was room for a French ship to swing, there was room for an English ship to anchor; and the plan he accordingly adopted was to keep entirely on the exterior side of the French, and station his ships, as far as he was able, one on the outer bow, and another on the outer quarter of each of the enemy's, thus doubling on them in the way which had been projected by Lord Howe when he intended to attack the French fleet at their anchorage in *Gourjean road*.

As the British squadron advanced the enemy opened a fire from the starboard side of their whole line into the bows of the leading ships. It was received in silence and with stern composure; whilst the men on board of every ship were employed aloft in furling the sails, and below in tending the braces, and making ready for anchoring. Captain Foley led the way in the *Goliath*, outsailing the *Zealous*, which for some minutes disputed the post of honour with him; and intending to fix himself on the inner bow of the *Guerrier*, kept as near the edge of the

shoal as the depth of water would admit; but his anchor hung, and having opened his fire, he drifted to the second ship, the *Conquérant*, before it was clear, then anchored by the stern inside of her, and in ten minutes shot away her masts. Captain Hood in the *Zealous* took the station which the *Goliath* intended to have occupied, and in twelve minutes totally disabled the *Guerrier*. The *Orion*, Sir James Saumarez, next passed to windward of the *Zealous*, discharging her larboard guns as long as they bore on the *Guerrier*; and running inside the *Goliath*, sunk a frigate which annoyed her, hauled round towards the French line, and anchoring inside between the fifth and sixth ships from the *Guerrier*, took her station on the larboard bow of the *Franklin* and the larboard quarter of the *Peuple Souverain*, receiving and returning the fire of both. The *Audacious*, Captain Gould, pouring in a heavy fire into the *Guerrier* and the *Conquérant*, fixed herself on the larboard bow of the latter, and, when that ship struck, passed on to the *Peuple Souverain*. The *Theseus*, Captain Millar, followed, and having brought down the *Guerrier's* main and mizzen masts, anchored inside the *Spartiate*, the third ship of the enemy's line. The sun was now nearly down; but Nelson's decisive manœuvre had already been completely executed in its most critical parts.

The *Vanguard*, bearing the admiral's flag, and leading his division, now anchored on the outside of the enemy's line, within half-pistol-shot of the *Spartiate*, and veering half a cable, instantly opened a tremendous fire, under cover of which the *Minotaur*, *Bellerophon*, *Defence*, and *Majestic*, passed ahead to occupy their several stations. On this side the French were completely prepared; and in a few minutes every man stationed at the first six guns in the fore part of the *Vanguard's* deck was either killed or wounded. The *Minotaur* anchored next ahead of the *Vanguard*, and took off the fire of the *Aquilon*, the fourth in the enemy's line. The *Bellerophon* passed ahead and anchored by the stern on the starboard bow of the *Orient* of a hundred and twenty guns, Brueys' own ship, and the seventh in the line, "whose difference of force was in proportion of more than seven to three, and whose weight of ball from the lower deck alone exceeded that from the whole broadside of the *Bellerophon*." The *Defence* took her station ahead of the *Minotaur*, and engaged the enemy's sixth ship, the *Franklin*, by which judicious proceeding the British line remained unbroken. The *Majestic* having got entangled with the main rigging of one of the French ships astern of the *Orient*, suffered severely from the heavy fire of that three-decker; but she at length swung clear, and engaging the *Heureux*, or ninth ship, on the starboard bow, received also the fire of the *Tonnant*, which was the eighth in their line. The remaining four ships of the British squadron, having been detached previous to the discovery of the French, were at a considerable distance when the action commenced, which was at half past six; and as night closed about seven, they had no other light to guide them in going into action than the fire of the contending fleets.

Trowbridge in the *Culloden*, the foremost of the remaining ships, being two leagues astern, came on sounding as the others had done; but as he advanced the darkness increased the difficulty of the navigation; and suddenly, after having found eleven fathoms water, and before the lead could be hove again, he was fast aground; nor could all exertions get off the ship in time to bear a part in the action. This accident, however, proved in some degree fortunate, since the *Culloden* served as a beacon to the *Alexander* and *Swiftsure*, which would otherwise have gone upon the reef, and thus enabled them to enter the bay and take their stations in the darkness. As the *Swiftsure* was bearing down she fell in with what at first

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seemed to be a strange sail, but proved to be the *Belle-rophon*, which, overpowered by the *Orient*, was now drifting out of the line towards the lee side of the bay, with her sails hanging loose, her lights knocked overboard, nearly two hundred of her crew killed or wounded, and all her masts and cables shot away. Suspecting how it was, Captain Hallowell, with great judgment, abstained from firing; and occupying with the *Swiftsure* the station of the disabled ship, he opened a heavy fire on the quarter of the *Franklin* and the bows of the French admiral; whilst Captain Ball, in the *Alexander*, passed under the stern of the *Orient*, and anchoring within side on her larboard quarter, raked her, at the same time keeping up a severe fire of musketry on her decks. Lastly, the *Leander*, finding nothing could be done to get off the *Culloden*, advanced with the intention of anchoring athwart hawse of the *Orient*; but the *Franklin* being so near ahead that there was not room for him to pass clear of the two, he took his station athwart hawse of the latter.

This description will serve to convey an accurate idea both of the plan of attack and of the mode in which it was carried into execution. Though fiercely contested and sanguinary, the issue of the battle was never for an instant doubtful. The first two ships of the French line had been dismasted within a quarter of an hour after the commencement of the action, and the others had suffered so severely that victory was already certain. At half past eight o'clock the third, fourth, and fifth, were taken possession of; and about nine a fire broke out in the *Orient*, which soon mastered the ship, illuminating the contending fleets with the light of the conflagration. About ten o'clock the ship blew up with an explosion so tremendous that the firing immediately ceased on both sides, and for a time no sound was heard to break this awful pause, except the dash of her shattered yards, masts, and timbers falling into the water from the great height to which they had been projected. The firing recommenced with the ships to the leeward of the centre; and at daybreak the *Guillaume Tell* and the *Généreux*, the two rear ships of the enemy, formed the only portion of their line which had colours flying. Not having been engaged, these ships cut their cables in the forenoon and stood out to sea, accompanied by two frigates, being the only portion of the enemy's fleet which escaped. It is needless to add that the victory was complete. Of thirteen sail of the line, nine were taken and two burnt; and of four frigates one was burnt and another sunk. The British loss in killed and wounded amounted to eight hundred and ninety-five; while of the French three thousand one hundred and five, including the wounded, were sent on shore by cartel, and five thousand two hundred and twenty-five perished. About two hours after the commencement of the action, Nelson received a severe wound on the head from a piece of langridge shot; and Captain Westcott of the *Majestic* fell. Brueys was killed before the fire broke out which destroyed his noble vessel. He had received three wounds, yet would not leave his post; but a fourth cut him almost in twain, and he died like a hero on the deck. From the description of this battle, or rather naval conquest, it must be obvious that its triumphant success was owing to a skilful repetition, with necessary variations, of the manœuvre which had decided the victory at Camperdown; and in fact Nelson, although not acquainted with Lord Duncan, wrote to him, soon after the battle, to tell his lordship how "he had profited by his example."¹

From the time of the battle of Actium, by which the so-

vereignty of the Roman empire was decided, no naval victory was ever attended with consequences so immediately and obviously important as this. The French directory had concealed their intended enterprise from the Ottoman Porte, which lays claim to the sovereignty of Egypt, but has never been able to make its claim fully effectual. The grand signior, however, considered the present attempt as an act of hostility against himself; and the maritime victory above mentioned encouraged him to declare war, in the name of all true Mahomedan believers, against that host of infidels which had invaded the land from which the sacred territory of Mecca is supplied with bread. In Europe similar consequences took place. The irresistible career of Bonaparte had compelled Austria to submit to peace, upon terms which left France in a state of most dangerous aggrandizement. But as this victorious chief, with the best part of his veteran army, was now held under blockade by the British fleet in a distant country, the hopes of Austria began to revive, and there seemed reason to expect, that by renewing the contest, her ancient rank in Europe might be recovered. The king of Naples entered into these views with great eagerness, and rashly declared war against France, without waiting for, and following, as he ought, the movements of the greater powers. The empress of Russia was now dead, and her son Paul had succeeded to the throne of the Czars. The empress had never contributed more than her good wishes towards the war which the other powers of Europe had waged against France; but her son, a man of a furious and passionate character, had not the sense to follow the same cautious policy, or to remain a quiet spectator of the issue of a contest against the French republic; and, encouraged by the naval victory of the Nile, which seemed to insure the absence of Bonaparte and his army, he declared his willingness, as far as his finances would permit, to join in a new combination against France.

Thus, by the victory of the Nile, Great Britain was enabled to procure allies, willing to send abundance of troops against her enemy, provided she consented to defray the necessary expense. In the mean time, the acquisitions and losses of Britain were nearly equally balanced in other quarters. An armament sailed towards the island of Minorca, and a descent was effected near the creek of Ad-daya. Here a body of Spaniards threatened to surround the first division of the invading army; but they were soon repulsed, and our troops gained a position from which they might have attacked the enemy with advantage, if the latter had not retired in the evening. The army seized the post of Mescadal, and a detachment took the town of Mahon and Fort Charles. It was expected that the principal stand would have been made at Civadella, where new works had been added to the old fortifications; but the approach of the English drove the Spaniards within the walls of the town, and General Stewart summoned the governor to surrender it without delay. Intimidated by the movements of the troops and the appearance of the squadron, the garrison capitulated, and thus the whole island was reduced without the loss of a single man. But towards the end of the same year, the British troops, which during a considerable length of time had occupied a great number of positions upon the coast of the island of St Domingo, found it necessary to abandon the whole. The power of the French government there had nearly been annihilated by a negro commander, Toussaint-Louverture, to whom the British surrendered Port-au-Prince and St Marc. The losses incurred in consequence of the un-

¹ Ekins' *Naval Battles*, pp. 234, 237. Southey's *Life of Nelson*, vol. i. p. 220 et seqq. We beg here, once for all, to acknowledge our obligations to this admirable and authentic biography for the principal materials of our condensed accounts of the battle off Cape St Vincent, the attack on Copenhagen, and the mighty crowning achievement of Trafalgar.

of fortunate attempt made by the British government to subjugate this island were immense.

Parliament assembled on the 20th of November; and in the speech from the throne it was observed, that the success which had attended our arms during the course of the present year had been productive of the happiest consequences, and promoted the prosperity of the country; that our naval triumphs had received fresh splendour from the memorable action in which Lord Nelson had attacked a superior enemy, and turned an extravagant enterprise to the confusion of its authors; that the magnanimity of the emperor of Russia and the vigour of the Ottoman Porte had shown that these powers were impressed with a just sense of the present crisis; that their example would be an encouragement to other states to adopt that line of conduct which was alone consistent with security and honour; that our preparations at home had deterred the enemy from attempting to invade our coasts; that in Ireland the rebellion had been suppressed; that under the pressure of protracted war, the produce of the public revenue had been fully adequate to the increase of our permanent expenditure; that the national credit had been improved, and commerce flourished in a degree formerly unknown. The debates which occurred in the House of Commons upon this occasion were not remarkably interesting, as the leading members of the old opposition were usually absent. Administration was chiefly opposed by Mr Tierney, Sir Francis Burdett, Sir John Sinclair, and Sir William Pulteney. In the House of Lords, Earl Darnley moved the usual address to the throne, which was seconded by Lord Craven.

As a prospect had now opened of reviving, upon a most extensive scale, the continental war against France, it became necessary to provide great pecuniary resources to subsidize the armies which were to be brought forward, especially by the Russians, the poverty of whose country could ill afford to sustain the expense of supporting armies in Italy or on the banks of the Rhine. The same difficulties, or rather doubts, however, concerning the prudence of carrying to its utmost length the British practice of borrowing money to defray the extraordinary expense incurred during each year of the war, which had led to an augmentation of what are called the assessed taxes, still induced the minister to attempt to raise a proportion of the extraordinary or war expenditure within the year, not by a loan, but by taxes to the requisite amount. With this view he brought forward what was accounted a very bold measure, namely, a project for imposing a general tax upon the income of every individual throughout the nation. Mr Pitt stated in the House of Commons his plan to be, that no one whose income was less than sixty pounds per annum should be obliged to contribute more than the taxes he already paid; but that every one who had an income of or beyond that amount should be additionally burdened, some in the proportion of ten per cent. and others at a lower rate. All who had two hundred pounds a year would be required to sign a declaration of their willingness to pay a certain sum, not less than a tenth part of their income, without particularizing the modes in which it accrued; and a scale of easy computation would be adjusted for the rest. If doubts of the fairness of the statement should arise, the commissioners might summon an individual before them, and demand upon oath a minute specification of his income; and if, on a continuance of suspicion, full proof of accuracy should not be adduced, they might fix the amount of contribution. If they should require more than a tenth, no relief would be allowed unless the books of the tradesmen, or the ordinary accounts kept by others, should be submitted to inspection. Having stated the outlines of his plan, Mr Pitt mentioned the data upon which he formed

an estimate of its produce. He was of opinion that the annual rent of all the land in England and Wales amounted to twenty-five millions of pounds sterling; a sum which, by the allowance of a fifth part for the exceptions under sixty pounds, and the modifications under two hundred pounds a-year, would be reduced to twenty millions. Six millions, he thought, might be assumed as the clear income of the land to tenants, the tithes might be valued at four millions, the produce of mines, canals, and the like, at three, the rents of houses at five, and the profits of the liberal professions at two; on all these heads it might be sufficient to allow an eighth part for Scotland, which would be five millions. Income drawn from possessions beyond seas might be stated at five millions; annuities from the public funds at twelve; and those of internal trade, mechanical skill, and industry, at twenty-eight millions. These calculations formed an aggregate of a hundred and two millions; and from this source about ten millions of supply were expected to arise. This measure was opposed, without success, by Mr Tierney, Sir John Sinclair, Mr Pulteney, and others. Its chief defects were its inequality in point of principle, and the falsehood it occasioned with a view to evade it when carried into practice. Its inequality in point of principle is extremely obvious; because, under the tax upon income, a man without capital who earned two hundred pounds per annum by his industry, paid the same tax to government with a man living in idleness and enjoying a revenue of the same amount upon a land estate. In its collection this tax presented to merchants, and all other persons whose income depends upon their own industry, a powerful temptation to represent the amount of the latter as extremely low. It was expected, indeed, that the vanity of appearing wealthy and prosperous would counteract this tendency; but it was soon found that, in a commercial community, the love of gain is not easily subdued by any other passion; and as a general understanding soon prevailed among men with regard to each other's feelings upon this subject, nobody regarded his neighbour as unprosperous, merely because he had reported his own income to government at a low rate.

The fear of a French invasion had in a former age induced the English nation so far to overcome their own prejudices as to consent to an incorporating union with Scotland. The rebellion in Ireland, together with the dread that by means of French aid Ireland might be dismembered from the British empire, as the American colonies had been, now produced a sense of the necessity of doing that which ought to have been done three centuries before this date; that is, of uniting Ireland to Britain, by incorporating into one the heretofore distinct legislatures of the two islands. The measure was at this period very practicable, because Ireland was in fact under the dominion of forty thousand troops, who had been collected to crush the rebellion, and protect the island against the French; and because the friends of government were too much intimidated by the confusion and the scenes of bloodshed which had recently occurred there, to venture to oppose vigorously a measure which promised for the future to preserve the tranquillity of the country inviolate. On the 31st of January Mr Pitt proposed the measure in the British House of Commons. He observed, that a permanent connection between Britain and Ireland was essential to the true interests of both countries; and that, unless the existing connection should be improved, there was great risk of a separation. The settlement of the year 1782 was so imperfect, that it substituted nothing for that system which it demolished; and it was not considered as final even by the ministers of the time. It left the two realms with independent legislatures, connected only by the identity of the executive power; a very insufficient

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tie, either in time of peace or of war, and inadequate to the consolidation of strength, or the mutual participation of political and commercial benefits. The case of the regency exhibited a striking instance of the weakness of the connection; and if the two parliaments had differed on the subject of the war, the danger of a disjunction would have been seriously alarming. The entire dissociation of the kingdom was one of the greatest aims of our enemies; and as their eventual success in Ireland would expose Britain to extreme peril, the establishment of an incorporative union, by which their views might be effectually baffled, was a necessary act of policy. Among the advantages which would accrue to Ireland from an incorporation with Britain, he mentioned the protection which she would secure to herself in the hour of danger; the most effectual means of increasing her commerce and improving her agriculture; the command of English capital, and the infusion of English manners and English industry, necessarily tending to meliorate her condition; whilst she would see the avenue to honours, distinctions, and exalted situations in the general seat of empire, opened to all those whose abilities and talents enabled them to indulge an honourable and laudable ambition. The question was not what Ireland would gain, but what she would preserve; not merely how she might best improve her situation, but how she might avert a pressing and immediate danger. In this point of view her gain would be the preservation of all the blessings arising from the British constitution. As the supposed loss of national independence formed, in the minds of many, a strong objection to the scheme, he argued that this would be a real benefit; that the Irish would rather gain than lose in point of political freedom and civil happiness; and that though a nation possessing all the means of dignity and prosperity might justly object to an association with a more numerous people, Ireland, being deficient in the means of protection and civil welfare, could not be injured or degraded by such a union with a neighbouring and kindred state as would connect both realms by an equality of law and an identity of interest. Mr Sheridan opposed a union, as particularly unseasonable, amidst the irritation which at this period prevailed in Ireland; and he deprecated the accomplishment of the object by means of force or corruption. The measure, however, was approved of by a very large majority; and in the House of Lords the same subject was afterwards discussed with a similar result. But in the Irish parliament the proposal was resisted with such vehemence, that administration, finding themselves supported only by a small majority, thought fit to avoid pressing the matter further at this time.

During the present year the British power in India was greatly augmented, and its territory extended, by the fall of Tippoo Sultan, the son and successor of Hyder Ali. From the time when this prince had been compelled by Lord Cornwallis, in 1792, to surrender one half of his dominions, it was understood that sooner or later he would make an attempt to recover what he had lost. It would even seem that he had entertained hopes of aid from the French, and that with this view he had privately sent envoys to the Isle of France, to attempt to form a connection with the present French rulers. But when intelligence reached India of the expedition to Egypt, and the victory of the Nile, the British governor-general demanded from Tippoo Sultan an explanation of his views; and after some fruitless negotiation, a British army under General Harris invaded the territory of Mysore, which they found in a bad state of preparation for war. After some slight encounters the British army encamped before Seringapatam on the 6th of April; but it was not till the 2d of May that the besieging batteries began to breach the wall. On the

4th, during the heat of the day, the place was stormed, and Tippoo himself perished fighting gallantly at one of the gates of the fortress. His dominions were seized by the British, who bestowed a portion of them upon the Mah-rattas and the nizam their ally; whilst part was reserved under the direct sovereignty of the East India Company, and the remainder nominally bestowed upon a prince of the family which had lost its power by Hyder's usurpation. The substantial authority over this last-mentioned portion of Tippoo's dominions, however, was in truth retained by the British government; and as the nizam himself soon became entirely dependent upon the British power, the whole peninsula of Hindustan, with the exception of the Mahratta states, which evidently could not long remain unsubdued, might now be considered as under the dominion of Great Britain.

In Europe the present campaign proved extremely eventful. The French directory had been more anxious to establish its own power at home, than careful to maintain the armies upon the frontiers and in the conquered countries in a proper state of force and efficiency. A French army under General Jourdan advanced into Suabia in the month of March, but was encountered and beaten at Stockach by the Archduke Charles. The importance of the possession of Switzerland instantly displayed itself. The vanquished French army immediately crossed the Rhine into Switzerland, and in that mountainous country contrived to make a stand during the greater part of the summer. The Austrians advanced as far as Zurich, of which they obtained possession; but before they could proceed further, the French armies, having been reinforced towards the end of the season, were enabled in their turn to assume the offensive.

In Italy the French manœuvred unskilfully at the opening of the campaign. Instead of concentrating their forces, they attempted to retain possession of the whole of that country, and were thus beaten in various engagements at different points. The combined Austrian and Russian army was commanded by the Russian general Suwarof, who pressed upon the French with incredible activity and energy; carrying on a multiplicity of sieges, and bringing his troops together with wonderful celerity, whenever his enemy attempted to take advantage of the manner in which his forces were scattered. Macdonald, with the Neapolitan army, was defeated on the Trebbia; Moreau, who succeeded Joubert, killed at the commencement of the battle, was beaten at Novi; and in a number of combats of less magnitude the Austro-Russian army proved almost uniformly successful. The result of the whole was, that before the campaign terminated, Suwarof had driven the French out of Italy, with the exception of Savoy and the Genoese territory. But this was not accomplished without a great loss of men in sieges and battles, in which the hardy warriors of the north suffered very severely. Their leaders depended for success more upon the intrepidity of their troops, and the promptitude with which they rushed into action, than upon the skilful dispositions with which they arranged their force or harassed their enemy. Hence it happened that, amidst all Suwarof's victories, no instance occurred of any column of French troops being compelled to surrender without fighting, nor was any advantage gained but by the efforts of superior force exerted in open battle. Such a warfare, carried on against a single enemy by a combined army, could not long be successful. The Austrian officers complained loudly of their northern allies as men destitute of military skill, who wasted armies without a proportional return of conquest; whilst, on the other hand, the Russians censured their associates as destitute of proper spirit, and as protracting the war by an ill-timed caution.

The advantage derived by the French from the possession of Switzerland having by this time begun to be understood, a resolution was in consequence formed to close the campaign, not by sending Suwarof from Italy into the south of France, but by directing him to turn his arms northward against the Alps. The Archduke Charles had spent the summer in pressing upon the French in that quarter, but had not been able to advance beyond Zurich; here, however, he left a considerable body of Austrians and Russians, and proceeded with a division of his army towards Mannheim and Philipsburg. Suwarof advanced from Italy at the head of eighteen thousand men to take the command of these troops; but his views were anticipated by the French general Massena, who, finding the Archduke Charles and Suwarof at the distance of more than a day's march on his left and right, instantly attacked the troops stationed near Zurich. The Austrians perceiving the hazardous nature of their situation, retreated with only a moderate loss; but the Russians, from an ill-judged contempt of their enemy, total ignorance of the country, and want of skill in the art of conducting war in it, maintained their ground till they were hemmed in on all sides. They attempted to resist the French, as they had often resisted the Turks, by forming a hollow square of great strength; but neither this nor their own courage afforded any safety against the artillery of the enemy, in the face of which an iron front of bayonets was presented in vain. Their order was at last broken, and their retreat converted into an utter rout. Suwarof was at the same instant advancing rapidly to their relief; but the victorious enemy now turned quickly upon him, and attempted to encompass him on all sides. By incredible exertions, however, and following paths which were believed to be utterly impracticable, he effected his escape with about five thousand of his troops, in want of every thing, and retaining only the muskets in their hands.

Thus terminated on the eastern side of France this active and brilliant campaign. The allies remained masters of Italy; but France was still enabled to menace that country, as well as Germany, by retaining possession of Switzerland. In the meanwhile the British attempted, with the aid of Russian auxiliaries, to drive the French out of Holland. On the 27th of August, a landing was effected under Sir Ralph Abercromby at the mouth of the Texel; and the Zuyder Zee was immediately entered by a British fleet under Admiral Mitchell. Upon this the Dutch admiral, Storey, surrendered the fleet under his command, alleging that his men refused to fight. The ships were twelve in number, and eight of them mounted from fifty-four to seventy-four guns. Here, however, the effectual success of the expedition terminated. The Duke of York afterwards assumed the command, and forces amounting to thirty-five thousand men were landed; but it was soon discovered that the invasion had been ill concerted and ill directed. To have afforded a prospect of success, the invading army should have been landed in the vicinity of Rotterdam, which was full of Scotsmen, and where the supporters of the stadtholder were numerous; and then advanced rapidly into the centre of the country, to encourage the numerous enemies of the French to come forward in favour of the invaders. Instead of this the army was disembarked at the extremity of a long and narrow neck of land, having the sea on both sides, where the French and Dutch were able to arrest their progress for a considerable time with a mere handful of troops. The unusual wetness of the season, which greatly injured the roads, also added to the difficulties with which the invaders had to struggle; and the British commander was at length under the necessity of withdrawing his troops to the point at which they had originally disembarked. Here a convention was entered into,

by which it was stipulated on the one hand that he should not injure the country, and that a number of French prisoners in England should be released; whilst, on the other hand, it was agreed that the Duke of York should be permitted to retire unmolested.

At the end of this campaign the French government underwent a new change. After the conquest of Egypt Bonaparte had invaded Syria, and subdued or conciliated most of the native tribes; but his career of victory was stopped at St Jean d'Acre by the Turkish governor of that town, assisted by the British under Sir Sidney Smith. He was forced to raise the siege of that place, after fifty-nine days of open trenches, and delivering five unsuccessful assaults; and having returned into Egypt, and destroyed a Turkish army at Aboukir, he ventured upon a step which is without example in the history of modern Europe. Having learned from an old newspaper the great reverses which the French armies had experienced in the early part of the campaign, and the general discontent produced by these misfortunes, he resolved to trust to fortune and return to France. With this view he secretly embarked, along with a select party of friends, on board a small vessel, leaving the command of his army, which was now completely insulated in the country, to General Kleber, an officer of high reputation for military genius and enterprise; and after escaping a thousand perils he landed safely at Frejus, in the south-east of France. The unexpected arrival of an officer who had never fought in Europe without success was welcomed by the public at large as a happy event; and in the first moment of joy little inquiry was made as to the manner in which he had abandoned his army, an act which in any other circumstances would have been regarded as one of the greatest of military crimes. Finding a party willing to second his views, Bonaparte now took advantage of the satisfaction occasioned by his arrival, together with the discontents arising from the corruption and mismanagement of the directorial administration, to usurp the government, cashier the directory, and to dissolve the representative legislature.

The British parliament was assembled as early as the 24th of September, in order to provide for an augmentation of force, which was thought necessary to give effect to the invasion of Holland, an enterprise of the success of which sanguine hopes were at that time entertained. The speech from the throne, after recommending the propriety of permitting to a considerable extent the voluntary service of the militia, in order to augment our forces abroad, stated that our prospects had been improved beyond the most sanguine expectation; that the deliverance of Italy might now be considered as secured; that the kingdom of Naples had been rescued from the French yoke, and restored to the dominion of its lawful sovereign; that the French expedition to Egypt had been productive of nothing but calamity and disgrace, whilst its ultimate views against our eastern possessions had been utterly confounded; that there was every reason to expect a successful result from our efforts for the deliverance of the United Provinces; and that to our ally the emperor of Russia we were in a great measure indebted for the favourable change in the general posture of affairs. It was further stated that, in pursuance of the recommendation of the British parliament, his majesty had communicated to both houses of parliament in Ireland their sentiments respecting a union with that kingdom.

In consequence of the recommendation from the throne, an act was passed, authorizing his majesty to receive into the army volunteers from the militia regiments, and some measures of finance were adopted; but government having received intelligence of the failure of the expedition against Holland, parliament was suddenly adjourned. In

Reign of George III. the meanwhile affairs on the Continent began to assume a most unpropitious aspect. The emperor of Russia, being exasperated at the defeats sustained by his troops towards the close of the campaign, became dissatisfied with his allies; and there was reason to dread that his irascible and unreasonable temper might lead him not merely to desert but to quarrel with them. In the meanwhile Bonaparte, under the title he had assumed of First Consul of the French Republic, resolved to signalize his acquisition of power by an attempt to procure peace. With this view he thought proper to address a letter, signed by himself, to the king of Great Britain. In this document, after announcing his own appointment to the office of first magistrate of the republic, he asked, "Is the war which for eight years has ravaged the four quarters of the world to be eternal? Are there no means of coming to an understanding? How can the most enlightened nations of Europe, powerful and strong beyond what their safety and independence require, sacrifice to ideas of vain grandeur, commerce, prosperity, and peace? How is it that they do not feel that peace is of the first importance, as well as the highest glory?" "France and England," he added, "by the abuse of their strength, may still for a long time, for the misfortune of all nations, retard the period of their being exhausted; but, I will venture to say it, the fate of all civilized nations is attached to the termination of a war which involves the whole world." This letter was transmitted through the medium of an agent of the French government, who resided at London for the sake of managing the exchanges and other affairs relative to prisoners of war.

But Lord Grenville, as secretary of state for foreign affairs, informed the agent who had transmitted Bonaparte's letter, that his majesty could not depart from the usual forms of transacting business, and therefore, that the only answer to be returned would be an official note from himself. In this note his lordship stated that the king wished for nothing more than to restore tranquillity to Europe; that he had only made war in defence of his people, against an unprovoked attack; and that it would be in vain to negotiate while the same system continued to prevail in France which had ravaged Holland, Switzerland, Germany, and Italy. "While such a system therefore prevails," continued his lordship, "and while the blood and treasures of a powerful nation can be lavished in its support, experience has shown, that no defence but that of open and steady hostility can be availing. The most solemn treaties have only prepared the way to fresh aggression; and it is by determined resistance alone, that whatever remains in Europe of stability for property, for personal safety, for social order, or the exercise of religion, can be preserved. For the security, therefore, of these essential objects, his majesty cannot place reliance on the mere renewal of general professions of pacific dispositions. Such professions have been repeatedly held out by all who have successively directed the resources of France to the destruction of Europe, and whom the present rulers have declared all to have been incapable of maintaining the relations of amity. Greatly will his majesty rejoice whenever it shall appear, that the danger to which his own dominions and those of his allies have been so long exposed has really ceased; whenever he shall be satisfied that the necessity of resistance shall be at an end, and, after so many years of crimes and miseries, better principles have prevailed, and the gigantic projects of ambition, endangering the very existence of civil society, have at length been relinquished. But the conviction of such a change can result only from the evidence of facts." His lordship then went on to say, with insulting irony, that the best pledge of the reality and permanence of such a change would be the

Reign of George III. restoration of the princes of the house of Bourbon; that such an event would at once remove all obstacles in the way of negociation, confirm to France the unmolested enjoyment of its ancient territory, and give tranquillity to other nations; that, however, his majesty did not limit the possibility of solid pacification to this mode, and made no claim to prescribe to France what should be the form of her government; that he only looked to the security of his own dominions, of his allies, and of Europe; that unhappily at present no such security existed, nor any sufficient evidence of the principles by which the new government would be directed, or even of its stability; and that in this situation, it remained for him to pursue, in conjunction with other powers, the exertions of a just and defensive war.

As one of the principal objects on account of which Bonaparte had commenced this negociation was probably to cast upon Great Britain the odium of continuing the war, he persevered in this purpose with uncommon dexterity. Appearing not to be disconcerted by the first rejection of his offers, he continued the correspondence through the medium of Talleyrand, his minister for foreign affairs, who, in a masterly note in answer to that of Lord Grenville, dissected the official communication of the British minister with consummate ability, and refuted the various statements and views which it embodied. He began with recriminating respecting the origin of the war, and presented a picture very differently sketched and coloured from that which Lord Grenville had portrayed in his letter. The charge of aggression brought against the French nation was haughtily repelled, and retorted on the coalesced powers, particularly on the British government. After expatiating on this subject, the French minister observed, that a sincere desire for peace ought to lead the parties to the discovery of the means of terminating the war, rather than to apologies or recriminations respecting its commencement; that no doubt could be entertained of the right of the French nation to choose its own government; that this was a point which could not be decently contested by the minister of a crown which was held on no other tenure; that at a time when the republic presented neither the solidity nor the force which it now possessed, negotiations had been twice solicited by the British cabinet, and carried into effect; that the reasons for discontinuing the war were become if possible more urgent; that, on the contrary, the calamities into which the renewal of the war must infallibly plunge the whole of Europe, were motives which had induced the first consul to propose a suspension of arms which might likewise influence the other belligerent powers;—and he concluded with pressing this object so far as to propose the town of Dunkirk, or any other, for the meeting of plenipotentiaries, in order to accelerate the re-establishment of peace and amity between the French republic and Great Britain. In the answer of the British minister to this note, the recrimination of aggression was as contemptuously repelled as it had been haughtily urged. Referring to his former note, Lord Grenville observed, that the obstacles which had been presented rendered hopeless for the moment any advantages which might be expected from a negociation; that all the representations made with so much confidence by the French minister, the personal dispositions of those in power, the solidity and consistence of the new government, were points which could not be admitted as motives for opening a negociation, since these considerations remained yet to be proved; and that the only evidence must be that already explained by his majesty, namely, the result of experience and the evidence of facts.

On the 22d of January copies of this correspondence were presented to the British parliament, along with a message from his majesty, announcing that he relied on the

Rei of support of his parliament, and the zeal and perseverance of
Geor III. his subjects, in carrying into effect such measures as would
best confirm the signal advantages obtained in the last cam-
paign, and conduct the contest to an honourable conclusion.
On the 28th of the same month the subject was discussed
in the House of Lords upon a motion made by Lord Gren-
ville for an address of thanks to his majesty in consequence
of the message. Lord Grenville contended, that nothing
in the state of Europe admitted a rational hope that there
was any security but in war; and that peace with a na-
tion at enmity with order, religion, and morality, would
rather be an acquiescence in wrong than a suspension of
arms in ordinary warfare. He entered into a comment
upon the note of the French minister, and disputed all its
positions, observing that the love of peace, on the part of
France, had been displayed in a war of eight years with
every nation in Europe excepting Sweden and Denmark;
that her disinclination to conquest had been evinced by
the invasion of the Netherlands, of Italy, of Switzerland,
and even of Asia; that no honourable or permanent peace
could be made with the present rulers of France; and
that every power with which she had treated could furnish
melancholy instances of the perfidy, injustice, and cruelty
of the republic. He remarked, that General Bonaparte,
in the third year of the republic, imposed upon the French,
at the mouth of the cannon, that very constitution which
he had now destroyed at the point of the bayonet. If a
treaty was concluded and broken with Sardinia, it was con-
cluded and broken by Bonaparte; if peace was establish-
ed and violated with Tuscany, it was established and vio-
lated by Bonaparte; if armistices were ratified and an-
nulled with Modena and the other petty states of Italy,
they were ratified and annulled by Bonaparte; if that
ancient republic Venice was first drawn into a war, and
compelled afterwards to conclude a treaty, it was that
Bonaparte might more easily overthrow her constitution,
and annihilate the political system by which she had ex-
isted with glory and security for ages past; if the govern-
ment of Rome was subverted, it was subverted by Bona-
parte; if Genoa was reduced to the same humiliating situ-
ation, her wealth and independence were sacrificed to Bona-
parte; if Switzerland, deluded by offers of peace, was
induced to surrender her rights and liberties, she was
deprived of them by Bonaparte. He had multiplied vio-
lations of all moral and religious ties; he had repeated
acts of perfidy; his hypocrisies were innumerable; and in
that country where he had affirmed that the French were
true Moslems, he had given us a correct idea of his sin-
cerity and his principles. If the interest of Bonaparte were
deeply concerned, he might be sincere, and there was no
doubt but it was his interest to consolidate his power;
but it ought not to be forgotten, that whenever any acts
of atrocity were to be accomplished by the French, they
had been usually effected by a suspension of arms. The
proposed negotiation would relieve her from the actual
pressure of alarming difficulties, but could not relieve Eng-
land from any. The ports of France, which were now
blockaded by our fleet and cruisers, would be thrown open
to introduce naval stores, and a variety of necessary ar-
ticles, of which the country was in want; and fleets would be
sent to bring back the troops which were now deprived of
all intercourse with the republic, and which might then
be employed in augmenting the numbers of the French
armies. To us a suspension of arms could not be produc-
tive of any benefit whatever; our ports were not blocked
up, our commerce was not interrupted; and it should
also be considered that there would be no security for the
maintenance of such a suspension. Was Bonaparte now
prepared to sign a general peace? If he were not, he could
not be sincere in his offers. It was necessary for him to

keep an army of sixty thousand men to preserve tranqui-
lity in the interior of France; every act of his government
was supported by force; and if he even were sincere, it
was hazarding too much to hazard all on his single life.
What reliance could be placed on the unanimity of the
French people? Men of the blackest characters had been
appointed to situations of the greatest trust; men infam-
ous for professed principles of anarchy had been raised
to places of confidence and power; and those who were
judges in the sanguinary tribunals of Robespierre were
now exalted to a distinguished rank in the republic. His
lordship concluded by disclaiming on the part of admini-
stration any wish to consider the restoration of the French
monarchy as the object of the war.

The Duke of Bedford opposed the noble secretary's mo-
tion, and contended, that all the objections against negoti-
ation might have been urged against the negotiations which
the ministers themselves had formerly opened at Lisle.
He considered the conduct of the British government on
the present occasion as unwise, because provoking and
unconciliatory. He thought that, in a correspondence
with the present French government, all discussion about
the original commencement of the war ought to have been
avoided. Whether England or France was the first ag-
gressor, was a question to be reserved to posterity. The
wild scheme of restoring the French monarchy was the
sine qua non, if not of peace, at least of negotiation; for
notwithstanding that the noble secretary had denied the
charge, yet whilst he pointed out the impossibility of treat-
ing with the French government during all its stages to
the present, and insisted upon vigorous hostilities being
the only means of our security, no inference could be drawn,
but that the war must be continued till monarchy was re-
established. If the restoration of monarchy was not the
object, what was it? Were ministers contending that we
ought to wait for a more favourable opportunity of enter-
ing into negotiation? Was it to be obtained by railing
at Bonaparte? There were no terms sufficiently strong to
censure the littleness which attacked his character, in
order to ruin him in the estimation of the French nation;
as if by so doing, we could negotiate with more effect, or
gain a fairer prospect of peace. His grace contended that
no confidence was to be reposed in our present continen-
tal allies; and as a severe scarcity at this period prevail-
ed in the country, this circumstance was made use of as
an additional argument against persevering in the war.
The first consul, doubtless, sought to make a peace ad-
vantageous to himself and the nation over which he pre-
sided: like all other statesmen, his motives might not be
influenced by humanity: it was to be supposed his aim
would be to satisfy the French people, and consolidate
his own power. As to the abuse which ministers threw
upon his character, it was their constant habit to abuse
every ruling power in France. But whenever they had
been driven by the voice of the people to negotiate, their
former ill language had never been any impediment. The
duke concluded with a motion for an address recommend-
ing a negotiation for peace.

Lord Borington supported the views of ministers. But
Lord Holland reprobated their conduct throughout the
contest. At one time they asserted that the ambition
of France was so insatiable, that she would listen to no
terms; they were now driven from that pretext, and urged
that a peace would be insecure. As to the ambition of
the enemy, it was a consideration of weight in the arrange-
ment of terms, not a preliminary objection preclusive of
treaty. What proof could be given of the abandonment
of dangerous views, but a negotiation in which moderation
would be displayed. Was it reasonable to suppose that
he would admit that the guilt of the aggression lay with

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France? This was a point which ought not to have been discussed. The object was to treat upon actual circumstances and the real grounds of dispute. Suppose that Bonaparte, desirous to attain peace by any means, should sit down to consider how he could succeed; what does the note allow him to do? He would find that the restoration of the hereditary line of kings was the only case in which a speedy peace would be admitted as possible; in fact, therefore, this restoration was the *sine qua non* in which immediate negotiation was admissible with ministers. But surely if the ambition of the republic was so formidable, we could not forget this ground of apprehension when we talked of restoring the house of Bourbon. Had we forgotten their proverbial ambition, and was their restoration the remedy for evils arising from such a source? We had now taken up the principle, so much objected to by Jacobins, of distinguishing between the people and their government. But what was the conduct of the French? Bonaparte distinctly renounced this principle in the letter to the king, and acknowledged the title and the character of his majesty's government. The note of our ministers was a manifesto to the royalists, and formed for that purpose alone. Lord Holland further stated, that the people at large disapproved of the abrupt rejection of Bonaparte's overtures; he therefore gave his most decided support to the amendment. The Earl of Carnarvon would not consider the answer of our ministers as a refusal to treat for peace, or a declaration of eternal war; it was a call upon the house and the country to pause before they rashly suffered themselves to enter into a negotiation with an unsettled government. He did not expect any extraordinary faith to be manifested by Bonaparte, more than by any other chief or chiefs; but although he would be best pleased with the restoration of monarchy in France, in all times, in monarchies as well as republics, aristocracies, and every other species of government, good faith in treaties was preserved and exemplified only as long as it was the interest of the parties to maintain it. So little integrity had history left on record, that, at the very time they were signed, a secret intention was often indulged to violate them at a particular period. The address, as moved by Lord Grenville, was then carried by a great majority.

In the House of Commons Mr Dundas moved a similar address, which gave rise to a similar debate. Mr Dundas said, that the leading feature of the French revolution was a disregard of all treaties, and a contempt for the rights of other powers; and in proof of this assertion, he considered it as necessary merely to recite the names of Spain, Naples, Sardinia, Tuscany, Genoa, Geneva, Modena, Austria, Russia, England, and Egypt, with Denmark and Sweden, though at all times neutral states. Britain had not at this time any reasonable cause to suppose that a change of principles had taken place. The Jacobinical form of government was indeed at an end; but in substance and essence all the qualities of the revolutionary government were in as full force at this moment as they were in the days of Robespierre. Mr Whitbread asserted, that, had it not been for the interference and ambition of the other powers of Europe, the French revolution would have assumed a very different character from that which it now exhibited. He remarked, that other powers had treated neutral states no less unjustly than had been done by the French; Lord Harvey and Lord Hood had ordered the French ministers to be dismissed from Florence; and by threats we had compelled Genoa to dismiss her French inhabitants. He compared Bonaparte with Suwarof, and the invasion of Egypt by France with that of Poland by Austria, Russia, and Prussia, whose friendship we had frequently courted. Mr Thomas Erskine entered at great length into the question, whether France or Great Britain

had been guilty of the original aggression in the war, and contended that the British government had engaged in it unnecessarily, and persisted in it without necessity. Mr Pitt, on the other hand, affirmed that the French leaders had themselves begun the war, on the principle that it was necessary to consolidate the revolution. With regard to the proposal to negotiate with their present leader, it was impossible to discuss fairly its propriety, without taking into consideration his personal character and conduct. Mr Pitt then expatiated on the conduct of Bonaparte at Campo Formio, in the Milanese, Genoa, Modena, Tuscany, Rome, Venice, Switzerland, and Egypt. His arts of perfidy, he said, were commensurate with the number of treaties; and if we traced the history of the men in this revolution whose conduct had been marked by the most atrocious cruelty, the name of Bonaparte would be found allied to more of them than that of any other within these ten eventful and disastrous years. From these facts the house might judge what reliance might reasonably be placed on this conqueror, and what degree of credit might be given to his professions. It had been observed, indeed, that whatever had been his character, he had now an interest in making and preserving peace. This was a doubtful proposition. That it was his interest to negotiate, would be readily acknowledged, and to negotiate with this country separately, in order to dissolve the whole system of the confederacy on the Continent; to paralyse at once the arms of Russia, of Austria, or of any other country which might look to us for support; and then either to break off his separate treaty, or, if he should have concluded it, to apply the lesson taught in his school of policy in Egypt, and to revive at his pleasure those claims of indemnification which may have been reserved to some happier period. Under all these circumstances of his personal character and his newly acquired power, what security had he for retaining that power but the sword? His hold upon France was the sword, and he had no other. But was the inference to be drawn from these considerations, that we ought in no case to treat with Bonaparte? No; but we ought to wait for the evidence of facts. At present there was nothing from which we could presage a favourable disposition in the French consuls. There was the greatest reason to rely on powerful co-operation from our allies; the strongest indication in the interior of France of a disposition to resist this new tyranny; and every ground to believe, that if we were disappointed of complete success, the continuance of the contest, instead of making our situation comparatively worse, would make it comparatively better. With regard to the negotiation at Lisle in 1797, to which allusions had been made, the Jacobin system of prodigality and bloodshed, by which the efforts of France had been supported, had at that period driven us to exertions which had exhausted the ordinary means of defraying our immense expenditure, and led many who were convinced of the necessity of the war to doubt the possibility of persisting in it. Under this impression we negotiated, not from the sanguine hope that its result would be permanent security, but from the persuasion that the danger arising from peace in these circumstances would be less than the continuance of war with inadequate means. Mr Fox was decidedly of opinion that France, at the commencement of the war, was the defending party. The aggressions of Austria and Prussia could not be denied by any impartial person; nothing could be more decidedly hostile than their proceedings; they scrupled not to declare to France that it was her internal concerns, not her outward actions, which provoked them to confederate against her; they did not pretend to fear her ambition, her conquests, her troubling her neighbours; but they accused her of new-modelling her own government. In all this he

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gn of was not seeking to justify the French, either in their internal or external policy. On the contrary, he thought their successive governments had been as execrable in various instances as any of the most despotic and unprincipled governments which the world had ever seen. Men bred in the school of the house of Bourbon, once engaged in foreign wars, would naturally endeavour to spread destruction, and form plans of aggrandisement, on every side; they could not have lived so long under their ancient masters without imbibing the insatiable ambition and restless spirit, the perfidy and the despotism, inherent in the race; they had imitated their great prototype, and through their whole career of crimes had done no more than trace the steps of their own Louis XIV. Are we for ever, continued Mr Fox, to deprive ourselves of the benefits of peace, because France has perpetrated acts of injustice? With the knowledge of these acts, we had treated with them twice, and ought not now to refuse to do so? Much had been said of the short-lived nature of military despotism; yet such was the government erected by Augustus Cæsar, which endured six hundred years. Indeed, it was too likely to be durable wherever it was established. Nor was it true that it depended on the life of the first usurper. Half of the Roman emperors were murdered, yet the tyranny continued; and this, it was to be feared, would be the case in France. On a division, however, the address was carried by a very large majority.

The great measure of a legislative union with Ireland was carried into effect during the present session of parliament. Administration had found it necessary to delay this matter in consequence of the opposition in the Irish parliament; but during the recess they had obtained a more ample majority; and as the British parliament had already, on Mr Pitt's motion, passed resolutions in favour of the union, the project was formally introduced to the Irish parliament on the 5th of February 1800, by a message from the lord-lieutenant, in which his excellency stated that he had it in command from his majesty to lay before the houses of legislature the resolutions of the British parliament, and to express his majesty's wish that they would take the same into their most serious consideration. After a long and spirited debate, the ministry prevailed by a majority of forty-three. The distinguished abilities of Mr Grattan were once more displayed on this interesting occasion. In the debate which took place on proposing the first article of the union, he opposed the measure with such vehemence, that the chancellor of the exchequer accused him of associating with traitors, and of disaffection to the government; but the reply of Mr Grattan was so pointed and severe, that the chancellor conceived himself under the necessity of resenting it by a challenge, and a meeting having taken place in consequence, he was wounded in the arm. The question, however, was carried by a considerable majority; and as the discussion proceeded, the numbers of opposition appeared to diminish. The last struggle, as it may be deemed, occurred on the 13th of March, when Sir John Parnell moved to petition his majesty to call a new parliament, in order that the sense of their constituents might be more fully ascertained; but this motion was also overruled. In the mean time the business proceeded with little opposition in the House of Lords, which, on the 24th of March, adopted the whole of the articles of union with few alterations; and soon afterwards both houses waited on his excellency with a joint address to this effect. No time was now lost in submitting the measure anew to the British parliament. On the 2d of April, a message from his majesty was presented to both houses of parliament, communicating the resolutions of the Irish parliament in favour of an incorporating union between the two kingdoms, and recommending the speedy

conclusion of a work so interesting to the security and prosperity of the British empire. In the House of Lords the measure was opposed by Lord Holland, on the ground that a union at this time was not the spontaneous offer of the parliament of Ireland, uninfluenced by corruption or menace; but the articles were afterwards carried in a committee of the house, after some debates of no great importance. In the House of Commons Mr Pitt stated that the principal act of the treaty, that which fixed the share of representation Ireland was to have in the united parliament, was founded upon a comparative statement of the population of both kingdoms, as well as the revenue of both. The number of members fixed for the counties and two principal cities was sixty-eight; and that for the most considerable cities, towns, and boroughs, was thirty-one, who would be selected without partiality. He next adverted to the arrangements respecting the House of Peers, and the members to be returned; and observed, that as the members for the Commons of Ireland were in number nearly double those of Scotland, the same rules would be observed with the peerage, which therefore was to consist of thirty-two members. It was also understood, that such peers of Ireland as might not be among the twenty-eight temporal peers, should be allowed to sit in the united parliament until elected. The only article consisting of minute details related to the apportionment of the shares of the revenue of each country respectively. Mr Grey opposed the union on nearly the same grounds as Lord Holland had done in the Upper House. It had been asserted in a speech of the lord-lieutenant to the Irish parliament, that five sevenths of the country, and all the principal commercial towns, except Dublin, had petitioned in favour of the union. But this only meant that nineteen counties had presented petitions, and that these counties constitute five sevenths of the surface of Ireland. He admitted the petitions in favour of the union; but by what means were they obtained? The lord-lieutenant, who, besides being the chief civil magistrate, is commander of a disciplined army of a hundred and seventy thousand men, and able to proclaim martial law when he pleases, procured these petitions, which were signed by few names, and those by no means the most respectable. But fortunately there were many petitions on the other side, not obtained by solicitation and at illegal meetings, but at public assemblies, of which legal notice had been given. Twenty-seven counties had petitioned against the measure; the petition from the county of Down was signed by seventeen thousand respectable, independent men; and all others were in a similar proportion. Mr Grey then adverted to some of the principal arguments of the unionists; and concluded by moving an address to his majesty for a suspension of all proceedings relative to the union, till the sentiments of the people of Ireland could be ascertained. Mr Sheridan represented the measure as an act of tyranny towards the people of Ireland, which must become the fatal source of new discontents and future rebellions. Mr Grey's motion was, however, rejected by an overwhelming majority.

Early in the session mention had been made by opposition of the unfortunate invasion of Holland by the British forces; but ministers declined entering upon the subject, as the expedition had been carried on under the superintendence of Mr Secretary Dundas, and that gentleman, soon after the meeting of parliament, had gone down to Scotland in the depth of winter, without any ostensible business; a circumstance which gave rise to suspicions that some dissatisfaction existed at court on account of the result of the Dutch invasion, or the manner in which the Duke of York had been supported in it by the administration at home. On the 10th of February, however, the

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subject was introduced in the House of Commons by Mr Sheridan, who moved for an inquiry into the causes of its failure. He treated the capture of the Dutch navy as of little value, or rather as pernicious, on account of the example of mutiny which it exhibited on the part of the seamen whom we had received into our service; he admitted that the restoration of the stadtholder was a justifiable motive for our interference, but contended that Britain had treated the people of Holland ill, by obliging them to enter into the present war, and avoiding to promise a restoration of their colonies in case of a successful invasion; he asserted that the expedition itself was ill arranged, as the army after its landing had no means of moving forward on account of the want of necessaries, and, instead of delivering the Dutch, was under the necessity of entering into a capitulation for its escape, and of holding out, as an inducement to enter into this capitulation, a threat of destroying for ever the commerce of that very people whom we had embarked to save; and he contended, that to vindicate the honour of the British army, it was necessary to inquire into the cause of its misfortunes upon this occasion. Mr Dundas defended the expedition against Holland with his usual dexterity. He stated its object to be threefold: first, to rescue the United Provinces from the tyranny of the French; secondly, to add to the efficient force of this country, and diminish that of the enemy, by gaining possession of the Dutch fleet; and, lastly, by hostile operations in Holland, to oblige the French to weaken their armies in various other quarters. Mr Dundas contended, that at the commencement of the expedition a great probability existed of the success of all these objects; two of them did actually succeed, and only one failed. With regard to the capture of the fleet, he declared himself astonished that a doubt should exist about the value of such an acquisition. That fleet had been absolutely destined for the invasion of our dominions; along with it we took nearly seven thousand seamen, all of whom were liable to be employed in the French fleet, and forty thousand tons of shipping, which might have annoyed our commerce. By the invasion of Holland, also, the French had been compelled to weaken their other armies, which gave success to Suwarof in driving them from Italy, and to the archduke on the Upper Rhine and in Switzerland. They had indeed succeeded in defending Holland; but, as the price of this success, they had been severely pressed in every other quarter. At the moment our enterprise was undertaken, it was doubtful whether they would send their reinforcements thither, or to other parts of the Continent. They had poured prodigious reinforcements into Holland, by which means we were unable to rescue it from their yoke; but the result was, that they had lost every other point which they had contested during the whole campaign. With respect to the conduct of the enterprise, never was a commencement more prosperous than that of the late expedition. Sir Ralph Abercromby had sailed for the Helder on the 13th of August, and every thing promised the most rapid success. On the 14th came on the most extraordinary hurricane that ever blew from the heavens; it was found impossible to land a single soldier on any part of the coast of Holland; and this continued till the 27th. The consequence was, that the enemy knew where our army must land, and their troops came in shoals to oppose us; seven thousand men were collected; and as they were superior in number, Sir Ralph could not land his men to advantage. The ardour of the soldiers and the gallantry of the commander were never excelled on any occasion. Without any thing but their muskets and bayonets, against cavalry and artillery, they made good their landing, and by it they secured the Dutch fleet. It was alleged that the troops had no means of drawing their waggons; but

they had no waggons at all, and could not possibly have landed them had they been there. Instantly on their landing they could not want them; for all they had then to do was to secure a landing place and a post of communication. Sir Ralph had to consider what position he should take till the 1st of September, when reinforcements would arrive. The same tempest prevented the Russian troops from arriving to reinforce the army; they did not come till the 18th. The Duke of York offered to the Russian general, D'Hermann, to delay the attack, if he thought his men were not sufficiently recovered from the fatigues of the voyage; but the general requested that the attack should be made, with a promptitude and alacrity which reflected the highest honour upon him; and this ardour led him into the field two hours sooner than the time appointed. The army, however, was gloriously successful until a late hour in the day. General d'Hermann and his troops were in possession of the village of Berghen, and crowned with victory, till his zeal led him beyond a given point, and turned the fate of the day. When the attack was made the French amounted to seven thousand, and the Dutch to twelve thousand men; yet, notwithstanding this superiority of force, our troops fought and conquered; but the French continually pouring in reinforcements, the duke was advised to accede to the terms of an armistice, which was by that time mutually wished for. The duke yielded to this advice; and, by so doing, consulted the dictates of reason and humanity. Mr Dundas contended that our army returned with as much honour as they entered Holland. The Duke of York, indeed, agreed to give up eight thousand French prisoners on condition that his retreat should be unmolested; but he could not be wrong in doing so, because our prisons were overloaded with them; and he did not recede from any one article in which national dignity was concerned.

Mr Tierney supported the proposal for an inquiry. He disputed the advantages said to result from the expedition, and contended, that to a secret committee, or in some other form, ministers ought to account for their conduct, and exonerate themselves from suspicions too strong to be removed without proof. It was unconstitutional, and an insult on the house, to say this could not be done consistently with the preservation of secrecy. General Abercromby landed on the 22d of August with ten thousand men; he got possession of the Helder; he was reinforced by General Don on the 27th. Was it not strange that fifteen thousand men, headed by an able general, and going by invitation, should think it imprudent to advance? Had the Dutch been well affected, why did they not declare themselves? No French troops were then in Holland to keep them in awe. Why did not the Duke of York sail at the same time with General Don? Why were all our forces sent to one place, and forty-three thousand men cooped up in a narrow peninsula where but few could act at a time? It was strange that ministers, who were so fond of making diversions, did not think of making a diversion in some other quarter. This was a point which only military men could determine; and the house was bound to examine officers, that the truth might be known. The capitulation, he said, had fixed an indelible blot on the national character. A king's son, commanding forty thousand men, had capitulated to a French general who had only thirty-five thousand. Mr Addington observed, that having maturely and dispassionately considered the nature of the proposed inquiry, it appeared to him to rest upon two grounds: first, the propriety of judging any measure by its event; and, secondly, that in consequence of a failure, there was a necessity for investigation. It ought to be recollected, that the worst concerted plans had often produced the most brilliant success, and the best terminated

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of in disaster. No human being could command success, and no existing government control the elements. The proposed inquiry was accordingly negatived by a very large majority.

During the present year the war proved extremely eventful. The army which Bonaparte had left in Egypt under General Kleber being disgusted by the desertion of their leader, a negociation was entered into by Kleber with the Turkish grand vizier and Sir Sidney Smith; the result of which was, that the French agreed to abandon the whole of Egypt, on condition of being permitted to return unmolested to France. The convention was concluded at El Arish on the 24th of January; and the immediate return of this discontented army to France might have proved dangerous, if not fatal, to the newly-established power of the first consul. But here the usual fortune of Bonaparte prevailed. The British government, suspecting that some proposal of this kind might be made, sent secret orders to Vice-admiral Lord Keith not to consent to any arrangement which might leave so large an army at liberty to act in Europe, or which should not include the surrender of all the ships in the port of Alexandria. The consequence was, that Lord Keith refused to ratify the treaty of El Arish which Sir Sidney Smith and the Turkish grand vizier had concluded, and detained as prisoners General Dessaix and a number of troops which had been sent from Egypt. The French general Kleber immediately intimated to the Turks a determination to resume hostilities. He attacked and totally routed their army, consisting of forty thousand men, in the neighbourhood of Grand Cairo; and multitudes perished by slaughter and in the desert, while the French remained complete masters of the country. When it was too late, an order arrived from Britain to permit General Dessaix and the troops along with him to land in France, and to fulfil every part of Sir Sidney Smith's treaty; but the state of affairs had changed; Kleber had been assassinated by a fanatical Arab, and his successor, Menou, refused to evacuate Egypt; so that it became necessary, at a future period, to send an army from Britain to drive the French out of the country which they had proposed to evacuate without firing a shot or shedding a drop of blood.

The Austrian armies in Germany and in Italy were respectively commanded by General Kray and by General Melas. The campaign was conducted on the part of the French government with great ability and decision. It had been publicly announced in all the French newspapers that the armies were to be reinforced as powerfully as possible; and that an army of reserve was to be formed in a central position between Germany and Italy, from which the armies might be supplied with fresh troops according to the events of the war. Dijon was mentioned as the head-quarters of this army of reserve, and it already amounted to upwards of forty thousand men. Nobody suspected that any important plan of operations or military stratagem was concealed under the affected notoriety of this arrangement. Accordingly the Austrians commenced the campaign by an attack upon Massena in the Genoese territory; and after a succession of obstinate conflicts the French were driven into Genoa, where they sustained a siege, till compelled to surrender from want of provisions. Whilst Melas besieged Genoa, and even pushed forward his parties through Nice into the ancient French territory, Bonaparte in person suddenly repaired to Dijon and joined the army, to the assembling of which Europe had paid little attention, on account of the appellation which it had received of an army of reserve; and immediately advancing, he crossed the Alps by the Great St Bernard, and descended into the Milanese with little opposition. At the same time powerful reinforcements joined him from Switzerland, of which the

French troops continued to hold possession. Bonaparte thus placed himself in the rear of the Austrian general, and hazarded every thing upon the fortune of a single battle. He was accordingly attacked on the plain of Marengo, near Alessandria; and, as the Austrians were greatly superior in cavalry and artillery, they proved victorious during the greater part of the day. The French wings were turned, the centre division was broken, and scarcely six thousand men stood firm at any one point, when General Dessaix, late in the action, arrived with a reinforcement of six thousand troops, though fatigued by a rapid countermarch of several leagues. At this moment the battle seemed to be irretrievably lost. The French had been thrown back in the utmost disorder upon Montebello, where Lannes was still maintaining a furious though desperate resistance; the whole field of battle was in possession of the Austrians; the French troops were crowded together in a disorganized mass, in which the enemy's artillery were committing the most frightful havoc; and only one effort more seemed necessary on the part of the Austrians, with their fine cavalry, in which arm they were greatly superior, to complete the destruction of the French army. Matters were in this state when Dessaix arrived, who, perceiving the desperate situation of affairs, instantly hurried his division into action. Surprised at, but not unprepared for this renewed attack, the Austrians developed a powerful force to oppose it; Dessaix fell mortally wounded; and his division were on the point of being overwhelmed, when an event almost unexampled in war not only saved the French army from destruction, but totally changed the fortune of the day, and converted a disastrous defeat into a complete victory. While a body of Austrian grenadiers, six thousand strong, were advancing to the charge along a broad causeway, and carrying all before them, they were suddenly and furiously attacked in flank by General Kellerman, at the head of six hundred horse, which he had managed to conceal among some mulberry trees. A panic immediately seized them, and believing themselves assailed by the mass of the French cavalry, they threw down their arms. The whole affair passed in an instant, and even the victors themselves were astounded at their own success. Bonaparte, however, lost not a moment in profiting by this extraordinary turn of fortune. The French rallied with their usual promptitude on Dessaix's division, which still preserved some degree of order; resumed their former positions; recommenced the battle, which they had a few minutes before given up for lost; and, animated with the enthusiasm inspired by Kellerman's extraordinary success, drove the Austrians from the field. In the French official account of this memorable conflict, which decided the fate of all Italy, no mention whatever is made of Kellerman's gallant and decisive attack; and it reflects little credit on the memory of Bonaparte, that, though he afterwards heaped wealth and titles in boundless profusion on the man who had not only saved him and his army from destruction, but converted a disastrous defeat into a splendid triumph, he should never have made any public admission of the unparalleled achievement which changed the fortune of the day. The service was probably considered as too great to be acknowledged, because it could never be sufficiently rewarded; and it ill comported with the character of Bonaparte to admit that, in genius, promptitude, and energy, he could ever be surpassed by any of his lieutenants. On the following day Melas entered into negociation, and, as the price of an unmolested passage to the Austrian states, he agreed to abandon all Piedmont, and the basin of the Po, and to surrender twelve of the strongest fortresses in Europe.

On the side of Germany the French under General Moreau were scarcely less successful. They passed the Rhine

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in the neighbourhood of Strasburg, where they were opposed by the Austrians. But this was only a feigned attack. Speedily retreating, the main body of their army descended from the mountains of Switzerland, and crossed the Rhine in the rear of the Austrian army near Schaffhausen. After a desperate engagement, the Austrians were defeated with the loss of ten thousand men, of whom four thousand were taken prisoners. As the mode of attack had been unforeseen, and was consequently unprovided for, the loss of magazines and baggage was immense. In another and harder fought battle, at Moskirch, the Austrians lost upwards of eight thousand men. At Biberach, Augsburg, and Hochstet, the French were equally successful; and the result was, that the Austrians were under the necessity of crossing the Danube, leaving the French masters of the electorate of Bavaria, and in a condition to invest Ulm. A general suspension of hostilities was now agreed to, by which both parties retained possession of their actual positions; and a negotiation for peace was entered into between the French and Austrians, which produced an attempt to negotiate on the part of Great Britain; but as the French also demanded a naval armistice, the negotiation was dropped; and after a considerable delay, during which the Austrian minister at Paris concluded a treaty which his court afterwards disowned, preparations were made for re-opening the campaign. But the French ultimately consented to renew the armistice with the Austrians, on condition of obtaining possession of the important fortresses of Ulm, Ingoldstadt, and Philipsburg. These armistices and negotiations proved of great service to the French. The consent to a truce in the midst of an unexampled career of victory gave an appearance of moderation to the new consular government; whilst the conclusion of a treaty at Paris, to which the Austrian government afterwards refused to adhere, induced neutral nations to consider Bonaparte as anxious for the attainment of peace. Hence the wonderful success which attended his arms, during the early part of the campaign, was far from rousing the jealousy of the other states of Europe. The northern nations eagerly courted his alliance; and the emperor Paul of Russia, actuated by the natural instability of his temper, and an admiration of military success, not only entered into a close alliance with Bonaparte, but seized the British vessels in his ports; whilst the Danes, Swedes, and Prussians, formed a confederacy for evading the right claimed in war by maritime states, of preventing their enemies from being supplied with naval stores by means of neutral vessels.

In the meanwhile Great Britain was greatly distressed by a scarcity of provisions, and riots broke out in London and some provincial towns. On this account parliament assembled on the 11th of November, and the principal discussion which occurred in it related to the scarcity which prevailed throughout the country, and involved in great difficulties both the middle and lower classes of society. The members of opposition asserted that the war and the scarcity were closely connected; whilst Mr Pitt and his colleagues contended that a more obvious cause might be found in the deficiency of the two preceding crops, owing to cold and rainy seasons. A royal proclamation was issued in the beginning of December, exhorting all heads of families to reduce the consumption of bread by at least one third, to abstain from the use of flour in pastry, and to restrict the consumption of oats and other grain by horses; and acts of parliament were at the same time passed prohibiting the exportation, and offering bounties upon the importation, of grain. These measures, however, were of a very doubtful character. By increasing the alarm of scarcity they induced wealthy persons to buy up grain, and to withhold it from the markets; the

prohibition of exportation of provisions was unnecessary, when a better price could be obtained in Britain than elsewhere; and the same high prices afforded a sufficient bounty for importation.

At the commencement of the following year government laid an embargo on all Russian, Danish, and Swedish ships in British ports; so that Great Britain was now at war with nearly all Europe. Austria, indeed, ventured to renew hostilities; but the French general Moreau, having defeated the Archduke John with tremendous loss, at Hohenlinden, drove back the Austrian army upon their capital, advancing within seventeen leagues of Vienna; whilst at the same time signal defeats were sustained by them both in Italy and in Franconia. From the necessity of their affairs, therefore, the Austrians were compelled to sue for peace, which was accordingly concluded at Luneville. The Netherlands and the Milanese were resigned; France extended her boundary to the Rhine; and Tuscany was relinquished by the grand duke, who was to receive an indemnification in Germany; whilst, on the other hand, the city of Venice and a portion of its ancient territory were given up to Austria. The German princes who suffered by the treaty were to receive an indemnification out of the ecclesiastical states of the empire; thereby weakening still further the influence of the house of Austria. By this treaty the French became masters of Europe to the southward of the Rhine and of the Adige.

The commencement of the year 1801 was marked in Great Britain by the termination of Mr Pitt's administration. When this event was announced to the public, it created no small degree of astonishment. Since Mr Pitt had come into office a new generation had sprung up; and a succession of the most extraordinary public transactions had occurred, amidst all of which that minister, with his kinsman Lord Grenville, and his friend Mr Dundas, had remained firmly established in power. The authority and influence of these men had in some measure interwoven itself in the opinions of the people, and they were surrounded by a train of powerful adherents, dependent on their patronage; whilst, at the same time, Mr Pitt himself retained such a degree of popularity as caused his dismission or resignation to appear a very bold measure in the present state of affairs. The ostensible cause assigned for Mr Pitt's dismission obtained little credit with any one. He was represented as having promised to the Irish Catholics an equalization of privileges with their fellow-subjects, on condition of their acquiescing in the treaty of union; but it was pretended that, since his majesty had been persuaded to oppose the measure, as contrary to his coronation oath, the ministry, in such a state of matters, could no longer honourably remain in office. Of the true cause of this change little is publicly known. It does not seem necessary, however, to search into secret history for an explanation of a transaction which may be sufficiently accounted for on principles which must be obvious to all. The influence acquired by Lord North, arising from the patronage he enjoyed during the American war, enabled him, by combining with others, to establish a formidable interest in the legislature. But the power possessed by him was trifling when compared with that which Mr Pitt and his friends possessed. The war which Mr Pitt had conducted had been expensive in a degree altogether unexampled in preceding times; whilst the circumstances under which it commenced had united, as a party under him, almost all the persons of property in the kingdom. During his long administration, too, the crown possessed, in a more direct manner than formerly, the increasing patronage of India; and hence the leading members of this administration might be regarded as having attained a degree of power and influence which could not easily be shaken,

and which might prove extremely inconvenient, when held by any combination of subjects in a free country. In such circumstances, it was natural for an experienced prince to wish for a change. Mr Pitt had been originally taken into office as the agent of the crown in the House of Commons, to support the royal prerogative there, against a combination of powerful and accomplished men; he had enjoyed great popularity, and had been considered as the man best qualified to conduct the war of the French revolution; and as he knew the high rank which he held in public estimation, and treated the House of Commons with but little deference, it is not improbable that in the cabinet he may have presumed upon the indispensable importance of his own services, and, accounting himself necessary to the administration of the empire, arrogated a degree of independence not at all graceful nor becoming in a mere instrument of the crown. Some, however, have thought that his retirement on this occasion is to be ascribed to a totally different cause; that as he had been mainly instrumental in plunging the country into the war with France, and as all his schemes for humbling that nation had proved abortive, he could neither admit his error, nor adopt the only means which now remained, in some degree to atone for it; and that he desired to escape the mortification of negotiating a peace with a power which he had so often denounced, and which he wished to exclude from the pale of political and social relations in Europe. And, in support of this view, it may be mentioned that, on the dismissal of this administration, a resolution appears to have been at the same time adopted by the British court, seriously and earnestly to endeavour to obtain peace upon any tolerable terms.

With regard to the general merits of Mr Pitt's administration, we are still probably too much involved in the passions and prejudices which it excited to be able to appreciate them with sufficient candour and intelligence. He derived great advantage from the copious and stately eloquence which he at all times displayed in the House of Commons; and certainly no man ever possessed so completely the art of managing the people of England, and retaining their attachment, at the same time that he continued to possess the confidence of his sovereign. Although he obtained the government of the British empire at a very youthful age, the prudence of his conduct and the magnitude of some of his designs entitle him to a very high rank as a statesman. His sinking fund, though not contrived by himself, and though based on erroneous principles, was a great and important measure, as it contributed to sustain the national credit at a period of unexampled difficulty and embarrassment, and enabled the country to weather a contest which might otherwise have proved fatal to its independence. His commercial treaty with France was also, whatever the political economists may say to the contrary, a measure recommended by the soundest wisdom. The most ambiguous circumstances in Mr Pitt's public conduct were those which related to parliamentary reform, to the trial of Mr Hastings, and to the slave-trade, in which he adopted the popular side in the debate, although the court was known to be hostile to his avowed sentiments, which accordingly were never successful. The most difficult question relates undoubtedly to the war with France. Though by the forms of the British constitution Mr Pitt was responsible for engaging in this war, and for continuing in it, yet as he was not actually the head of the state, it is possible that the interference of Britain might not originate with him, and that he had only the alternative of engaging in the war or of relinquishing his power. If the war is to be considered as advised and conducted by him, he is responsible for all its consequences, the enormous aggrandisement of France,

the subjugation of the weaker states, and the accumulation of that intolerable load of debt which hangs like a mill-stone round the neck of this country, and encumbers every effort it can make to develop its natural resources. Had Britain originally remained neutral, or rather, had she negotiated in favour of the independence of France, brought into hazard as it was by the combination of the great military powers, that country would have been confined within her ancient boundary; Italy, Switzerland, and Holland would have retained their independence; and the strength of Austria would have remained unbroken; or, if Britain had withdrawn early from the contest, and avoided urging and subsidizing the continental powers, until they were successively vanquished, the same result might have ensued. On the other hand, if the war is to be considered as undertaken to overturn the principles of the French, it was undoubtedly successful to a certain extent, as it compelled them to abandon these principles, and to have recourse to a military usurpation; but it ought to be remembered, that to Britain as a nation the political principles of the French were of no importance whatsoever, whilst their permanent aggrandisement was calculated to bring into hazard our very existence as an independent nation. Mr Pitt and his friends called forth the resources of the country for the support of the war to an astonishing extent. Immense treasures were lavished in supporting our allies in fruitless or absurd expeditions, and in schemes which served only to augment the public burdens, and to increase the influence of the crown by the extension of its patronage. The acquiescence of the public in the war was preserved by keeping the minds of men in a state of constant alarm, from the fear of danger to the constitution, in consequence of the alleged disaffection of a body of the people; and in this manner a constant spirit of persecution was maintained throughout the country, which thus seemed to be ruled rather by a jealous faction than by a legitimate government. The concluding measure of Mr Pitt's administration, the union with Ireland, is entitled to much praise. It was suggested by the course of events, and tended to remedy a great defect in the constitution of the British empire, the want of consolidation into one united political body.

Of the associates of Mr Pitt, Lord Grenville, who acted as minister in the House of Lords, was the principal in England, and Mr Dundas in Scotland, and perhaps also in the rest of the empire. This last gentleman possessed the greatest share of power ever intrusted to any Scotsman since the union, excepting for a short time to Lord Bute. During a considerable length of time he appears to have conducted almost the whole public business of that vast assemblage of nations, in all the climates of the globe, which constitutes the British empire; and under his patronage, and that of his friend Mr Pitt, a numerous body of dependents rose to the possession of boundless opulence; whilst they themselves, engrossed by the pursuits of ambition, were understood to have been somewhat careless of their private concerns.

At the time when the change of ministry took place the king became affected with a severe illness, supposed to be the result of anxiety and agitation of mind. In making choice of a new prime minister, however, he avoided admitting into power the party which had opposed the war; and selected Mr Addington, who, as we have already mentioned, was originally patronized by Mr Pitt, and who, as speaker of the House of Commons, had gained approbation by his good temper, prudence, industry, and conciliating manners. This gentleman appears to have obtained from his predecessors in office a promise of support in parliament; and he was therefore represented throughout the country as nothing more than a nominal minister, holding a tem-

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porary situation, which, on the first opportunity, he was to relinquish in favour of Mr Pitt and his friends. And this account of the state of affairs derives plausibility from the actual support which the new minister received from these gentlemen, and from the influence which they evidently retained in the nomination to all inferior offices. Mr Addington's appointment as first lord of the treasury and chancellor of the exchequer was followed by the nomination of Lord Eldon to the office of lord high chancellor, of Lord St Vincent to that of first lord of the admiralty, of Lord Hawkesbury as secretary of state for the foreign department, of Lord Pelham for the home department, and of Colonel Yorke as secretary at war. Lord Eldon was succeeded by Sir Michael Pepper Arden, then created Lord Alvanley, as chief justice of the common pleas; and Mr Addington by Sir John Mitford, afterwards Lord Redesdale, as speaker of the House of Commons. Sir William Grant was made master of the rolls, and Mr Law and Mr Percival attorney and solicitor generals.

On the 2d of February the parliament of Great Britain and Ireland was opened; but as the king's illness immediately succeeded that event, the new administration did not obtain formal possession of office until the month of March, and during the interval the old ministers continued to hold their former situations. At the opening of the imperial parliament, as it was now called, the speech from the throne expressed great satisfaction that the crown would now be able to avail itself of the advice of the united parliament of Great Britain and Ireland; hoped that this memorable era, distinguished by a measure calculated to consolidate the strength of the empire, would be equally marked by the energy and firmness which the present situation of the country so peculiarly required; and stated that the court of Petersburg had treated our representations of the outrages committed against our ships and property, and against Englishmen, with the utmost disrespect, and that acts of injustice and violence had aggravated the first aggressions. It mentioned that a convention had been concluded between Petersburg, Copenhagen, and Stockholm, the avowed object of which was to establish a new code of maritime law, inconsistent with the rights and hostile to the interests of this country; and that the earliest measures had been taken to repel this confederacy, and to support those principles essential to the maintenance of our naval strength. It recommended an inquiry into the high price of provisions, and promised a termination of the present contest whenever it could be done consistently with security and honour.

When the usual address was moved, some discussion occurred in both houses regarding the actual state of affairs, more particularly as connected with the combination of the northern powers against Britain. In the House of Commons Mr Grey deplored the prospect of a war with all Europe. Russia had evidently been guilty of the grossest violence and injustice towards this country, in the confiscation of the property of our merchants, and in the treatment of our sailors; but the emperor accused the British government of violating a convention by which he was to receive the island of Malta as the reward of his co-operation against France; and the truth of this assertion ought to be investigated. Concerning the northern confederacy, Mr Grey remarked, that the principles on which it was founded were of no recent origin, as indeed was very generally known. Mr Pitt, who still acted as chancellor of the exchequer, declared, that with every one of the three northern powers, independently of the law of nations, we had on our side the strict letter of engagements by which they were bound to us. In the convention signed between Great Britain and Russia, the latter bound herself to use her efforts to prevent neutral powers

from protecting the commerce of France on the seas or in the ports of France; and Denmark and Sweden had expressed their readiness to agree on that very point which they were now disposed to contend. We did not indeed know the precise terms of their new convention; but as its existence and general object were acknowledged, we must necessarily act upon the supposition of their hostility.

In March Mr Grey moved for an inquiry into the state of the nation. We were now, he said, in the ninth year of a war with France, and threatened with a war by all the maritime states of Europe, if not actually involved in it; we had added L.270,000,000 to the capital of our national debt, and above L.17,000,000 to our annual taxes; we found ourselves opposed to France, which was now extended in territory, increased in population, and supported by all the states of the north. We were opposed to her with diminished means, exhausted strength, and stripped of every ally. It was, therefore, incumbent on the representatives of the people to enter into a serious inquiry into the means most likely to restore to us security and happiness. The conquests we had made during the war had not compensated our disasters or the acquisitions made by France. Her frontier now extended to the Rhine, to the Alps, and to the ocean; yet all these possessions we had consented to abandon as the price of peace which ministers might have made with France confined within her ancient limits, while our own country was prosperous and happy. Our losses were thus irretrievable, and our triumphs empty. There was almost no shore from the Texel to the Adriatic which had not witnessed the defeat of our forces and the disgrace of our arms. The unfortunate attempt upon Dunkirk, the shameful retreat through Holland, the evacuation of Toulon, the abandonment of Corsica, and the expedition to Quiberon, were all fatal proofs of ill-concerted schemes; but the late expedition against Holland was more disgraceful than the rest, because it terminated in a capitulation to an inferior force. Administration had acted with such imprudence that even our very allies were now converted into enemies. The Swedes and other neutral nations had complained that their trade was molested, their ships detained, and justice refused them in our courts, or so long delayed that it was useless. These were points which undoubtedly deserved investigation. Nor did the internal condition of the country less require consideration. The sum of L.270,000,000, as already mentioned, had been added to the national debt, exclusive of imperial and other loans, and the reduction by the sinking fund; and yet the ex-ministers alleged that they left the country in a flourishing condition. Yet every Englishman, from diminished comfort, or from positive distress, felt this declaration to be an insult. The situation of the sister kingdom was also alarming in the extreme. Since the recall of Earl Fitzwilliam, Ireland had been the scene of transactions shocking to humanity. Was it now tranquil? Though rebellion had been crushed in the field, it lurked in secrecy; the mass of the population was disaffected; and nothing prevented the separation of Ireland from Britain but the inability of France to send a force to assist the rebels. Upon these grounds he called for an inquiry into the actual state of affairs, and demanded the support of the new administration, as a testimony of their disapprobation of the measures of their predecessors.

Mr Dundas defended, with plausible statements and arguments, the conduct of the war. The principle which he laid down was, that war ought to be directed to the destruction of the commerce and colonial possessions of the enemy, including their maritime power, which must depend upon their commerce. It was hardly possible for England to be long at war with France without being in-

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Mr Pitt, after expressing his respect for the new administration, observed that no point had been more disputed than that of confidence in ministers. By some people it was held that no person was entitled to it, till he had given proofs of having merited it. But this never could be carried in substance to the letter; for whoever entered into any employment, must at first be new to it: there could be no experience without trial; but when persons had been tried in one situation, and had acquitted themselves well in it, it was a rule to give them credit when they entered into another, until proof of their incapacity or misconduct appeared. He then lavished encomiums on Mr Addington, on Lord Hawkesbury, and on Earl St Vin-

cent, and asked the gentlemen of the opposition if they knew any one among themselves superior to Lord Hawkesbury, excepting one, Mr Fox, whose transcendent talents made him an exception to almost any rule. Of the other individuals composing the new administration, much might be said; but he would only add, that it showed little reflection or consideration to affirm that the present ministers were unentitled to a constitutional confidence; and the house was bound by the best principles of policy to wait to see the conduct of the servants of the crown before they withheld it. Upon the subject of the retirement or dismissal of the late administration, he contended that his majesty had a right to part with his servants, and his servants to retire, without any explanation being given to the public. Concerning the affairs of the Irish Catholics, and their connection with the dismissal of administration, he stated, that a memorandum had been sent, in the name of a noble lord at the head of the executive government of Ireland, who thought it essential to communicate the grounds of the change of administration to persons more immediately connected with the Catholics; and it had been at his express desire that this communication had been made, and the motives explained to them which led to the change, in order to prevent any misrepresentation. Emancipation of the Catholics was a term he disclaimed. He never understood the situation of the Catholics was such as to need what deserved to be called emancipation; but he thought the few benefits which they had not yet anticipated might easily have been added to those so bountifully conferred on them in the present reign, not as a matter of right, but of liberality and political expediency. Had such a measure preceded the union, indeed, it would have been rash and destructive; and even now, if any attempt was made to push it so as to endanger the public tranquillity, or to pervert the affections of any of his majesty's subjects, the ex-ministers would be forward and firm in resisting it. But he hoped the day would come when such a measure might be revived, and carried in the only way in which he wished to see it carried, conformably to the general tranquillity of the empire. To him it had appeared of such importance, that, being unable to bring it forward as a measure of government, he did not conceive it possible for him, with honour, to remain in the same situation; and he wished it to be understood, that whenever the same obstacles did not exist, he would do every thing in his power to promote its success. He denied, however, that any of those who had retired from office had so pledged themselves to the Catholics as to be under the necessity of resigning their offices because they could not perform their promise; and he also denied that ever the Catholics supposed they had received such a pledge. An expostulation was natural, but a pledge had never been given. He concluded that the British government had justice on its side, or rather was supported by the law of nations, in the claims which it now maintained to search neutral vessels for military stores on their way to the enemy, and to declare particular French or other ports under blockade, to the effect of thereafter having a right to arrest neutral vessels attempting to enter them.

Mr Fox observed, that it was undoubtedly a doctrine recognised by the law of nations, that free bottoms did not make free goods; but he doubted much the propriety of discussing it at this critical juncture. He thought our claims upon this subject were extended too far when they were made to reach to naval stores, as these had not been at former periods considered as contraband. He then adverted to the successes of the war, which had been enumerated by Mr Dundas. On the navy he bestowed merited praise, and also on the late first lord of the admiralty, assigning his merit as the reason for the constant

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and brilliant triumphs of the navy; whilst our military expeditions, though our troops were as brave as our seamen, had generally failed. In naval tactics almost every thing depended on the talents of the officers; whereas, in military movements, much depended on the original design. The boasted capture of islands was not the object of the war: our object had been to protect Europe against France; and how had we succeeded? Which of the two nations had been most aggrandised in the course of it? A country paying double its land-rent was in a state demanding inquiry. The war secretary had talked much about the diversion of war, and shown us its nature on his principles. He had sent the Duke of York and an army of thirty thousand men to the only neck of land perhaps in the world where a fifth part of their own numbers was equal to cope with them. Of the armistice of Hohenlinden, and the negotiation which followed it, Mr Fox spoke with indignation, reprobating the conduct of the minister, which had so fatally proved that eloquence was distinct from wisdom. Time had now evinced that all the great objects of the war were defeated, and that our allies had deserted us; and when no prospect of success remained, we might resort to negotiation. The same men who had rejected the proposals of Bonaparte with insolence, must approach with respect, suing for favour, to avoid participating in the disgrace. With regard to the Irish Catholics, no man ought to be deprived of his rights because he worshipped God according to the dictates of his own conscience; and it was a reflection upon parliament to say, as Mr Pitt had said, that he could not there propose a measure which he approved. He declared his belief that no such difficulty existed, but that the late minister might wish to retire for a season, till overtures of peace were made, which he could not make, without mortification, to the man whom he had insulted. He spoke of the change of administration as a fortunate occurrence. Some indeed might suspect, from the panegyric of Mr Pitt, that the new ministers were the less gaudy puppets, directed by those who had quitted their stations; and if they adopted the system of their predecessors, with the additional blame of being hostile to the Catholic claims, acting in this point from their own motives, they would be unworthy of confidence.

The new chancellor of the exchequer, Mr Addington, observed, that the degree of confidence which the House of Commons ought to extend to the present ministers, it was not for him to conjecture; they only asked for that portion of it which should be constitutionally reposed in persons duly appointed by his majesty, unless it was precluded by antecedent character and conduct. He then commented on all the leading points in dispute with the northern powers; and after stating the grounds of the principle asserted by this country, and referring to the exception made by existing treaties, gave it as his opinion that the right for which we contended was vital and fundamental, and could neither be abandoned nor compromised. Lastly, he felt it incumbent on him to declare that it was the determination of his majesty's servants to take such steps as appeared to them best calculated for the restoration of peace; that no form of government in France would obstruct negotiation; and that if there was a corresponding disposition on the part of the enemy, the grand object would be accomplished. The motion for inquiry was then rejected by a majority of more than two to one.

Notwithstanding the change of ministry, Mr Pitt brought forward the business of the supplies in the House of Commons. Their amount was L.35,587,462; of which sum L.15,800,000 was for the navy, L.15,902,000 for the army, and L.1,938,000 for the ordnance. The income tax

was now stated as only amounting to about L.6,000,000. As some deficiencies of former estimates required to be provided for, Mr Pitt stated, that the whole charge of the two countries, for the service of the year, would amount to L.42,197,000, which would be divided between the two countries thus: Great Britain for its fifteen sevenths of the joint expense, and those charges which belonged separately to her, would have to defray, in round numbers, L.37,870,000; and the charges falling upon Ireland would be L.4,324,000. The sum of L.25,000,000 was raised by way of loan, and new taxes were imposed upon paper, tea, houses, lead, the post-office, and various other articles. The income tax was also further mortgaged, so that the debt for which it was pledged amounted to L.76,000,000.

In the meanwhile, to prevent the active co-operation of Denmark with Russia, and if possible to break up the northern confederacy, an armament was fitted out in the British ports, consisting of eighteen sail of the line, and as many frigates, sloops, bombs, fire-ships, and smaller vessels, as made the whole amount to about fifty-three sail. This fleet, under the command of Admiral Sir Hyde Parker, with Vice-admiral Lord Nelson as his second, sailed from Yarmouth on the 12th of March 1801, and soon afterwards reached its first rendezvous at the entrance of the Cattegat. The Danish navy at this time consisted of twenty-three ships of the line, with about thirty-one frigates and smaller vessels, exclusive of guard ships. The Swedes had eighteen ships of the line, fourteen frigates and sloops, seventy-four galleys and smaller vessels, besides gun-boats, all in a state of respectable equipment. The Russians had eighty-two sail of the line and forty frigates, and of these thirty-one sail of the line and a proportional number of frigates were in commission in the Baltic, being divided between Petersburg, Archangel, Cronstadt, and Revel; but their fleet was ill built, ill manned, ill officered, and ill-equipped; and, of the number in commission in the Baltic, probably not more than twenty sail of the line could have been put into a condition to act against an enemy. At this time the Swedes had eleven sail of the line at Carlscrona, ready for sea, and in tolerable fighting trim; the Danish fleet at Copenhagen consisted of ten sail of the line ready for sea, exclusive of about an equal number in an unserviceable state; and, assuming the available Russian force as above stated at twenty sail of the line, it thus appears that the entire effective strength of the fleets of the northern confederates amounted to forty-one sail of the line, besides frigates and smaller vessels. But as not more than twenty-five or twenty-six of these could by any means have been assembled at a given point, and as even the best of them were decidedly inferior to our ships in condition, equipment, discipline, and skill, eighteen, or even fifteen British sail of the line were more than a match for them. This explanation is necessary to show that the British government were not guilty of any rashness in sending to the Baltic a force apparently so small in comparison of that to which it was opposed; though they certainly deserve the strongest reprobation for allowing any petty consideration to prevent them from appointing Nelson to the command.

It was at first hoped that Denmark, notwithstanding her hostile demonstrations, would prefer negotiation to war; but this expectation having been disappointed, and the Danish government, instead of conciliation, having assumed a tone of open defiance, preparations were made for forcing the passage of the Sound, though in these much valuable time was lost through the irresolution of the admiral, Sir Hyde Parker. At length, however, the British fleet weighed anchor at six o'clock in the morning of the 30th March, and with a fine breeze at north-north-west

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Geor. III. entered the Sound in a line a-head, the van division com-
manded by Lord Nelson in the Elephant, the centre divi-
sion by the commander-in-chief, and the rear division by
Rear-admiral Graves. At seven the batteries at Elsinour,
which had been represented as tremendous, commenced
firing at the Monarch, which was the leading ship, and the
other ships as they passed in succession; but the distance
was so great that not a shot took effect, nor did any of the
British ships fire in return except the van division, which
only discharged a few broadsides. As the strait at Elsi-
neur, however, is less than three miles across, a mid-chan-
nel passage would undoubtedly have exposed the ships to
a fire from Cronenburg Castle, adjoining Elsinour, on the
one side, and from the Swedish town of Helsingburg on the
other; but the British having observed that the batteries
of the latter mounted only eight guns of a small calibre,
inclined to the Swedish shore, where not even a show of
opposition was made, and passing within less than a mile
of it, avoided a fire which, as proceeding from nearly a
hundred pieces of cannon, could scarcely have failed to
do much injury to the ships. About noon the fleet an-
chored at some distance above the island of Huen, which
is about fifteen miles from Copenhagen; and the com-
mander-in-chief, Vice-admiral Lord Nelson, and Rear-ad-
miral Graves, accompanied by Captain Domett and the
commanding officers of the artillery and troops (namely,
the forty-ninth regiment, two companies of the rifle corps,
and a detachment of artillery which had been embarked
on board a division of the fleet in the Downs), proceeded
in a lugger to reconnoitre the enemy's defences. These
were soon ascertained to be of the most formidable de-
scription. It was apparent that the Danes could not be
attacked without great difficulty and risk; and when a
council of war was called in the afternoon, much as usual
was urged to show the propriety of forgoing, or at least
delaying, the attack. Councils of war never fight. But
happily the opinion of Nelson prevailed, and he offered his
services for the attack, requiring ten sail of the line and
all the small craft. Sir Hyde Parker willingly accepted
the tender, gave him two more line-of-battle ships than he
asked, and wisely left every thing to his own judgment.

The force at Copenhagen was not the only obstacle to
be contended with. The approach to it was by a channel
extremely intricate and little known; and, to increase the
difficulty of navigating it, the Danes had removed or mis-
placed the buoys. But Nelson himself saw the soundings
made, and buoys laid in the outer channel, between the
island of Saltholm and the Middle Ground, boating it upon
this exhausting service until it was completed. An attack
from the eastward was first meditated; but a second ex-
amination of the Danish position, on the 31st, and a fa-
vourable change of the wind, determined the vice-admiral
to attack from the south. Accordingly, on the morning
of the first of April, the British fleet removed to an an-
chorage within two leagues of the town, off the north-
western extremity of the Middle Ground; a shoal extend-
ing along the whole sea front of the city of Copenhagen,
and leaving an intervening channel of deep water called
Konigstiefe, or King's Channel, about three quarters of a
mile wide. In the course of the forenoon Nelson, accom-
panied by Captain Riou of the Amazon, reconnoitred for
the last time the position which he was about to attack;
and soon after his return at one o'clock the signal to weigh
appeared at the Elephant's mast-head. It was received
with a shout throughout the whole squadron, and prompt-
ly obeyed. They weighed with a light and favourable
wind; the small craft pointed out the course distinctly;
Riou led the way in the Amazon; and coasting along the
edge of the right hand shoal or Middle Ground until they
reached and partly rounded its southern extremity, the

squadron anchored off Draco Point just as the darkness
closed, the headmost of the enemy's line not being more
than two miles distant. Captain Hardy now proceeded
in a small boat, under cover of the night, to examine the
channel between the anchorage and the Danish line, and
actually approached near enough to sound round the first
ship of the latter, using a pole lest the noise of throwing
the lead should occasion a discovery. Having completed
his task, he returned about eleven o'clock, and reported to
the admiral the depth of the water, and the practicability
of the channel up to the Danish line. This was gratifying
news to Nelson, though it added to his impatience, and
prevented him from sleeping during the remainder of the
night, the whole of which was spent in preparing instruc-
tions and receiving reports.

The force now about to be attacked was of the most for-
midable description. It consisted of eighteen vessels, all
two-decked ships, but some of them old and dismantled, with
frigates, praams, and radeaux, mounting altogether about
six hundred and fifty guns, and moored in a line of about
a mile in extent, flanked at the north end, or that nearest
the town, by two artificial islands called the Trekröner or
Crown Batteries, one of thirty twenty-four pounders, and
the other of thirty-eight thirty-six pounders, with furnaces
for heating shot, and commanded by two-decked block-
ships. The entrance into the harbour and docks, which are
situated in the heart of the city, was protected by a chain
drawn across it, and also by some batteries on the north-
ern shore, particularly the Trekröner already described;
and, in addition to this, two seventy-four gun ships, Danne-
marek and Trekröner, a forty-gun frigate, two eighteen
gun brigs, and several armed zebecs, provided with furnaces
for heating shot, were moored in advantageous positions off
the mouth of the harbour. Along the shore of Amak island,
a little to the southward of the floating line of defence,
were gun and mortar batteries; and as the Danes were ani-
mated by an enthusiastie spirit of patriotism, and eager
by every possible means to repel the assailants, there was
no want of men, skilful and brave, to work the guns, either
afloat or on shore.

The day of the second of April broke, as Nelson had
hoped it would, with a favourable, south-easterly wind;
and the signal for all the captains to come on board the
flag-ship was hoisted as soon as it could be seen. As
circumstances prevented the admiral's plan of attack being
strictly followed, it may suffice to state that all the line-
of-battle ships were to anchor by the stern abreast of the
different vessels composing the enemy's line, an operation
for which they were already prepared by having cables
out of their stern-ports. The Amazon, Blanche, Alemène,
Arrow, and Dart, with two fire-ships, all under the direc-
tion of Captain Riou, were to co-operate in the attack on
the ships stationed at the mouth of the harbour, and to
act otherwise as circumstances might require. The bomb-
vessels were to station themselves outside the British line,
and to throw their shells over it; while the Jamaica, with
the brigs and gun-vessels, was to take a position for rak-
ing the southern extremity of the Danish line; and a sim-
ilar station was assigned to the Desirée. It was also
intended that the forty-ninth regiment, under Colonel
Stewart, and five hundred seamen under Captain Free-
mantle of the Ganges, should storm the principal of the
Trekröner batteries, the instant that its fire should be
silenced by the cannonade from the ships. Between eight
and nine o'clock the pilots, most of whom had been mates
in Baltic traders, were ordered on board the Elephant.
But as they hesitated about the bearing of the east and
of the shoal, and the exact line of deep water, it became
evident that their knowledge was not to be trusted. Nelson
was extremely perplexed. The signal for action had been

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made; the wind was fair; not a moment was to be lost. They were urged to be steady, to be resolute, and to decide; but they wanted the only ground for steadiness and resolution in such a case; and Nelson had now reason to regret that he had not trusted to Captain Hardy's single report. At length Mr Alexander Briarly, the master of the *Bellona*, undertook to lead the fleet; and his proposal being acceded to, the captains returned to their ships, and at half-past nine the signal was made for the ships to weigh in succession, and advance to the attack.

The *Edgar* led the way; but the *Agamemnon*, which was next in order, having anchored rather outside than off the great shoal, could not weather it, and was obliged to bring up again in six fathoms water, where the current was so strong that, although she afterwards re-weighed, and continued for a long time to warp with the stream and kedge anchors, she was compelled again to bring up nearly in the spot from which she had last weighed. When the misfortune of the *Agamemnon* was discovered, the admiral made signal for the *Polyphemus*, which followed the *Edgar*; and the *Isis* steered after the *Polyphemus*. The *Bellona*, notwithstanding a fair wind and ample room, kept too close on the starboard shoal, and grounded abreast of the outer ship of the enemy. The *Russell* following the *Bellona*, also grounded; and although both were within range of shot, their absence from their intended stations was severely felt. Three ships of the squadron were now aground and comparatively useless; so that Nelson was compelled to begin the attack with one ship of the line less than he had calculated upon as absolutely necessary. In compliance with the wish of the pilots, each ship had been ordered to pass her leader on the starboard side, from a supposition that the water shoaled on the larboard; but, as Captain Hardy had proved, the water deepened all the way to the enemy's line. The *Elephant*, flag-ship, came next; but Lord Nelson, as soon as he perceived the state of the *Bellona* and *Russell*, ordered his helm to be put a starboard, and passed within those ships; and all the ships astern followed his example. By this act of promptitude on the part of the admiral, the greater part of the fleet were saved from going on shore. At the moment when Lord Nelson's squadron weighed, Admiral Parker's eight ships did the same, and took up a position somewhat nearer the mouth of the harbour, so as to menace the northern wing of the defence; but a nearer approach was impracticable in time to render any active service in the engagement.

The cannonade commenced at five minutes after ten, and for nearly an hour the principal ships engaged were the *Polyphemus*, *Isis*, *Edgar*, *Ardent*, and *Monarch*. By half-past eleven, however, the *Glatton*, *Elephant*, *Ganges*, and *Defiance*, got to their respective stations, as did also several frigates and smaller vessels, and the action now became general. The *Desirée* proved of great service in raking the *Provesteen*, and drawing part of her fire from the *Polyphemus* and *Isis*; but owing to the strength of the current, the *Jamaica*, with the gun-vessels, could not get near enough to be of any service in the action; and the bomb-vessels were not able to execute much. The absence of the *Agamemnon*, *Bellona*, and *Russell*, disconcerted the plan of the attack, and caused several of the British ships to sustain a heavier share of the enemy's fire than had been allotted to them, or they were well able to bear; and among the sufferers on this account was the *Amazon* frigate, which, along with four others under Captain *Riou*, had boldly taken a position right against the *Trekröner* batteries. The cannonade had continued three hours, and few if any of the Danish block-ships, praams, or radeaux, had ceased firing, nor had the contest as yet taken a decisive turn to either side. Meanwhile the commander-in-chief, near enough to the scene of conflict to

know the unfavourable accidents which had deprived Nelson of one fourth of his force, and yet too distant to know the real state of the contending parties, suffered the most dreadful anxiety: and from the reports made to him that signals of distress were flying at the mast-heads of two British line-of-battle ships, and the signal of inability on board a third; from observing the zig-zag course and slow progress of the *Defence*, *Ramillies*, and *Veteran*, which he had dispatched as a reinforcement; and from the distance of the *London*, which bore his flag, preventing his judging of the relative condition of the contending parties; Sir Hyde Parker was induced to throw out the signal for discontinuing the action. When this was reported to Nelson, he continued to walk the deck without appearing to take any notice of it. At the next turn the signal lieutenant met him, and having stated that the commander-in-chief had thrown out number thirty-nine, asked if he should repeat it. "No," replied Nelson, "acknowledge it;" and presently he called after the officer to know if the signal for close action was still flying. Being answered in the affirmative, he said, "Mind you keep it so;" and, after pacing the deck for some time, moving the stump of his lost arm in a manner which always indicated great emotion, he accosted one of the officers thus: "Do you know," said he, "what is shown on board the commander-in-chief? Number thirty-nine." The officer asked what that meant. "Why, to leave off action." Then, shrugging up his shoulders, he exclaimed, "Leave off action! No, damn me if I do. You know, Foley," turning to the captain, "I have but one eye; I have a right to be blind sometimes;" and then putting the glass to his blind eye, in sportive bitterness, he exclaimed, "I really do not see the signal;" adding, after a momentary pause, "Damn the signal! Keep mine for closer battle flying. That's the way I answer such signals. Nail mine to the mast!" The three frigates and two sloops nearest to the *London*, however, obeyed the signal, and hauled off from the *Trekröner* batteries; when "the gallant, good *Riou*" was killed by a raking shot, which cut him in two, just as the *Amazon* presented her stern to one of the latter.

About half past one the fire of the *Danes* began to slacken, and at a little before two it had ceased along nearly the whole of their line. Some of the praams and light vessels had also gone adrift; but few if any of the vessels whose flags had been struck would suffer themselves to be taken possession of, and fired on the boats as they approached; whilst the batteries on the isle of *Amak* aided them in this irregular warfare. Nelson was justly irritated at this conduct on the part of the *Danes*; and at one time had thoughts of sending in the fire-ships to burn the vessels which had surrendered. But, as a preliminary measure, he retired into the stern gallery, and wrote to the crown prince of Denmark that celebrated letter, which will ever be memorable in the history of England: "Vice-admiral Lord Nelson is commanded to spare Denmark when she no longer resists. The line of defence which covered her shores has struck to the British flag; but if the firing is continued on the part of Denmark, he must set on fire all the prizes that he has taken, without having the power of saving the men who have so nobly defended them. The brave *Danes* are the brothers, and should never be the enemies, of the English." This letter was carried on shore with a flag of truce by Sir Frederick Thesiger, who found the crown prince at a sally-port. Meanwhile a destructive cannonade was still kept up by the *Defiance*, *Monarch*, and *Ganges*, while the near approach of the *Defence* and *Ramillies* silenced the fire of the *Indosfore*, then, *Holstein*, and the ships next to them in the Danish line. But the great *Trekröner* still continued its fire. This formidable work, having had nothing but frigates and sloops

Re of opposed to it, and that only for a time, was comparatively
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fifteen hundred men, it was considered as too strong to be
successfully stormed. It was now judged advisable to
withdraw the fleet out of the intricate channel while the
wind was fair; and preparations were making for this pur-
pose, when the Danish adjutant-general Lindholm came,
bearing a flag of truce; upon which the Trekröner discon-
tinued its fire, and the action, after having lasted five
hours, during four of which it had been hotly contested,
was brought to a close.

The message from the crown prince being to inquire the
purport of Lord Nelson's note, the latter replied in writ-
ing, that humanity was the object; that he consented to
stay hostilities in order that the wounded Danes might be
taken on shore; that he would take his prisoners out of
the vessels, and burn or carry off his prizes, as he should
think fit; and that he would consider this as the greatest
victory he had ever gained, if it should lead to a recon-
ciliation between the two countries. Sir Frederick The-
siger was dispatched a second time with the reply; and
the Danish adjutant-general was referred to the com-
mander-in-chief for a final adjustment of terms. Lind-
holm, accordingly, proceeded to the London, about four
miles off; and Nelson, availing himself of the opportunity
thus afforded, made signal to the leading British ships, all
of which were much crippled in their rigging and sails, to
weigh in succession. The Monarch led the way, and touch-
ed the edge of the shoal; but the Ganges taking her amid-
ships, drove her clear. The Glatton, drawing less water,
passed free; but the Defiance and Elephant grounded
about a mile from the Trekröner, and there remained fix-
ed for many hours, in spite of the exertions of their crews.
At the opposite end of the line, also, the Desirée, having
gone to assist the Bellona, became fast on the same shoal.
Soon after the Elephant grounded, Lord Nelson quitted
her and followed Lindholm to the London. The boats of
Sir Hyde Parker's division were actively employed during
the whole night of the 2d in bringing out the prizes, and
in getting afloat the ships which were aground; and, by
the morning of the 3d, the latter, except the Desirée, were
got off. The negotiations continued during the five fol-
lowing days; and, in the interval, all the prizes, except the
Holstein, a sixty gun ship, which was sent home, were set
fire to and destroyed. Six line-of-battle ships and eight
praams had been taken. Of the former, the Zealand, a
much finer ship than the Holstein, was included amongst
those consigned to the flames, for what reason we have not
been able to ascertain. On the 9th an armistice for four-
teen weeks was, after much discussion, agreed to; and
Denmark engaged to suspend all proceedings under the
treaty of armed neutrality which she had entered into with
Sweden and Russia.

This was a murderous action. Our loss in killed and
wounded fell little short of twelve hundred; whilst that
of the Danes, including prisoners, amounted to about six
thousand. Many of the British ships had suffered severely,
from the steady hull-firing of the enemy; whilst, as
to the Danish ships or floating hulks, the greater part of
them were literally knocked to pieces; and had the pilots
permitted the British ships to take a closer position, where
the heavy cannonades of the Glatton and Ardent would
have produced their full effect, the destruction would have
been still more complete, and certainly more rapid. For
the battle of Copenhagen Nelson received the title of Vis-
count; a paltry reward for services equally splendid in

themselves, and important to the maritime interests of
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On the 12th the British fleet sailed from Copenhagen
roads by the difficult channel of the Grounds, between the
islands of Amak and Saltholm, and steered for the north-
ern extremity of the island of Bornholm, in order to inter-
cept a Swedish squadron, reported at nine sail of the line.
The Swedish admiral, however, whose force consisted of
only six sail of the line, sought refuge behind the forts of
Carlsrona; and here a negotiation was opened, which, on
the 22d, ended in an agreement by his Swedish majesty
to treat for the accommodation of all existing differences.
On the 5th of May Sir Hyde Parker was recalled, and
Nelson invested with the command, which ought never to
have been for one moment intrusted to another. On the
8th he informed the Swedish admiral, by a flag of truce,
that although Sir Hyde Parker had consented not to in-
terrupt Swedish navigation, he, Lord Nelson, would act
against the Swedish fleet if he found it at sea; and he
left Captain Murray with six sail of the line, the Glatton,
and a frigate, to cruise off Carlsrona. On the 14th his
lordship anchored off Revel roads, prepared, if necessary,
to let Russia feel "the Nelson touch," under which Den-
mark and Sweden had quailed; but events had already
occurred in that country which changed the aspect of af-
fairs, and brought on an accommodation without any fur-
ther hostilities.¹

On the 23d of March the emperor Paul, who had per-
formed so versatile and extraordinary a part on the political
stage, from the period when he ascended the Russian throne,
expired suddenly. His capricious tyranny, which was at
last about to be directed against the members of his own
family, proved fatal to him, and he fell the victim of one
of those conspiracies to which despots are peculiarly expos-
ed. His son and successor, Alexander, immediately dis-
claimed all hostility against Great Britain, and made re-
paration for the damage which our merchants had suffer-
ed from the embargo laid upon their ships. A convention
was adjusted with Russia in the month of June, which put
an end to the dispute with the northern states, as Sweden
and Denmark could not of themselves hope to resist the
power of Great Britain; and by the third article of the
agreement it was stipulated, that effects embarked in neu-
tral vessels should be free, with the exception of contra-
band stores of war, and the property of an enemy; that
the latter designation should not include merchandise of
the produce, growth, or manufacture of the countries at
war, acquired by the subjects of the neutral state, and
transported on their account; that the commodities pro-
hibited should be such only as were declared contraband
by the treaty of commerce concluded between Great Bri-
tain and Russia in 1797; that a port should be considered
as under blockade when the ships of a belligerent power
should be so stationed as to render it evidently dangerous
to enter; that neutral vessels should not be stopped, ex-
cept upon strong grounds; that the proceeding should
be uniform, prompt, and legal; and that the right of
searching mercantile ships sailing under convoy of a ship
of war should only be exercised by the ships of the go-
vernment, not by those of private adventurers. By this
arrangement the chief points in dispute were settled in
favour of this country.

The war between France and Great Britain was now
reduced to merely maritime operations, and these were of
no great magnitude. One of the most important occurred
upon the coast of Spain, between Sir James Saumarez

¹ James's *Naval History of Great Britain*, vol. ii. p. 518, et seqq. London, 1822; Southey's *Life of Nelson*, vol. ii. p. 100, et seqq. London, 1813.

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and a squadron of French and Spanish ships of war. On the morning of the 6th of July, the British admiral stood through the Straits of Gibraltar, with the intention of attacking three French line-of-battle ships and a frigate, which were lying at anchor off Algeiras. On opening Cabrita Point he found that the ships lay at a considerable distance from the batteries on shore, and having the advantage of a leading wind, he conceived that he had every prospect of success. He had previously directed Captain Hood in the *Venerable* to lead the squadron; but the wind failing, this officer found it impossible to occupy the station assigned to him. Captain Stirling in the *Pompée*, however, having anchored opposite the inner ships of the enemy, commenced the action; while, in the ardour to engage, the *Hannibal* unfortunately ran aground. Every effort was now made by the admiral to cover this ship from the enemy's fire; but as she was only three cables length from one of the batteries on shore, he was obliged to retire, and to leave her in their hands. The loss on board the English squadron was considerable. The admiral had scarcely reached harbour when he was apprised that the French line-of-battle ships, disabled in the action of the 6th, were on the 8th reinforced by a squadron of five Spanish ships of the line under the command of Don Juan de Mozen, and a French ship of seventy-four guns; and that they were all under sail on the morning of the 12th of July, together with their prize the *Hannibal*. He had almost despaired of having a sufficient force in readiness to oppose such numbers; but by great exertion he was able to warp out of the Mole with all the ships under his command, the *Pompée* excepted, which had not time to get in her masts. The object of the British admiral being to intercept this powerful force on its way to Cadiz, he observed, late in the evening, that the enemy's ships had cleared Cabrita Point, and at eight he bore up after them. About eleven the *Superb* came up with the hostile squadron, and opened her fire at not more than three cables' length. At this critical period a mistake of the enemy decided the fate of the action. In the darkness and confusion, the Spanish ships fired upon each other; the *Real Carlos* took fire and blew up; whilst the *Hermenegildo*, mistaking her for an enemy, ran on board of her, and shared her melancholy fate; and the *San Antonio*, of seventy-four guns and seven hundred and thirty men, being thus left unsupported, struck to the *Superb*. The remaining ships of the enemy now crowded all sail and stood out of the straits; and at daybreak there appeared in sight only one French ship, which was standing towards the shoals of Cavil. But at this juncture the wind failing her, the *Venerable* was able to bring her to action, and had nearly silenced her when the loss of the mainmast obliged the captain of the *Venerable* to desist; and this ship, which was one of eighty-four guns, escaped along with the rest.

As the French had now resumed their usual menacing project of invasion, and appeared to be collecting a force in the harbour of Boulogne, an attempt was made by Lord Nelson to obstruct their preparations; and he succeeded in doing some damage, which appears to have encouraged him to make a more serious effort. Boats intended for boarding the French vessels were sent off in the night in four divisions, under the conduct of the Captains Somerville, Parker, Cotgrave, and Jones; and launches furnished with howitzers were detached under Captain Conn to join in the enterprise. Parker's division first approached the enemy, and commenced a furious attack, making strenuous efforts, with the most undaunted courage, and sanguine hopes of success. But an unforeseen obstacle baffled all their exertions. This was a very strong netting traced up to the lower yards of the French vessels, which were also

fastened by chains to the ground and to each other; and so effectual was the resistance of the enemy thus protected, that the crew of Captain Parker's boat were repulsed in their attempts to board a large brig, by a furious discharge of cannon and musketry, which killed a number of the assailants, while many more were wounded and maimed. The captain received a shot which carried off his leg and part of his thigh, and his boat would have been seized by the enemy, had not a cutter seasonably towed her off. In the mean time Somerville silenced the fire of a brig near the pier head; but so far from being able to bring her off, he found difficulty in securing the retreat of his own boats. Cotgrave, after a spirited attack, was deprived of the services of many of his men by a fire from the flotilla and the shore. And Jones felt so strongly the obstruction of the tide, that not being able to approach before the break of day, when the other captains were returning, he retired without making any hostile attempt. Captain Parker died of his wounds after the return of the fleet to the Downs. The number of British seamen killed and wounded on this occasion amounted to nearly two hundred.

Owing to the refusal of the former administration to ratify the capitulation of El Arish, negotiated between General Kleber and Sir Sidney Smith, the French still retained possession of Egypt. To remedy this unpardonable blunder a considerable force had been dispatched from Great Britain, under the conduct of an experienced and gallant officer, Sir Ralph Abercromby. The British forces under Lord Keith and General Abercromby, after unexpected delays on the coast of Asia Minor, arrived off Alexandria on the 1st of March; and the following day the fleet made sail for the bay of Aboukir, where it anchored. The sea continued to run high until the 8th, and no disembarkation could be effected; but on that day the first division made good their landing at ten o'clock in the morning, in the face of a body of French, who, evidently aware of their intention, were posted in force, with considerable advantage, on some sand hills opposite the landing place. The front of the disembarkation was narrow, and a hill which commanded the whole appeared almost inaccessible; yet the British troops ascended it under a fire of grape and musketry with the utmost intrepidity, and forced the French to retire, leaving behind them seven pieces of artillery, and a number of horses. The disembarkation was continued during that and the following day; while the troops which landed on the 8th advanced three miles the same day. On the 12th the whole army moved forward, and came in sight of the French, who were formed advantageously on a ridge, with their left resting on the canal of Alexandria and their right towards the sea. As it was determined to commence the attack on the 13th, the British force marched in two lines by the left, with an intention of turning the right flank of the enemy. But the attack was in some measure anticipated by the French, who descended from the heights on which they were formed, and assailed the leading brigades of both lines. The British troops were therefore compelled to change their front, which, though one of the most difficult operations in war, was executed with the greatest precision; and the rest of the army immediately followed their example. After a severe conflict, victory declared in favour of the English, though not without considerable loss.

The French commander-in-chief, Abdallah Menou, appears to have acted upon this occasion with but little judgment. Instead of bringing down nearly his whole force to the coast, which would have enabled him greatly to outnumber, and consequently, in all probability, to defeat the invaders, who were less acquainted with the country than his own officers, he thought fit to hazard an engagement on the 21st of March with only half his force. The battle commenced before day light in the morning, by a

sign of false attack on the left of the English under Major-general Craddock, in which the French were repulsed. But the most vigorous efforts of the enemy were directed against the right of the English army, which they endeavoured by every possible means to turn. The attack on this point was begun with great impetuosity by the French infantry, sustained by a strong body of cavalry, who charged in column. The contest was unusually obstinate. The French were twice repulsed, and their cavalry were repeatedly intermixed with the English infantry. While this was passing on the right, the French attempted to penetrate the centre of the British army with a column of infantry, who were also repulsed and obliged to retreat. A corps of light troops, however, advanced, supported by infantry and cavalry, to keep in check the left of the English, which was the weakest of the line; but all their efforts were fruitless, and the British remained masters of the field. The loss on our side was great, amounting in killed, wounded, and missing, to upwards of fifteen hundred. The loss of the French was calculated in the English accounts at three thousand. One of the French generals, Roiz, was killed, and Generals Lanusse and Bodel died of their wounds. A French regiment which had been styled invincible was destroyed in this battle, and its colours fell into the hands of a serjeant of the 42d regiment, called Sinclair, having, it is said, been picked up on the field by a Maltese, named Anthony Lutz. The victory of the 21st decided the fate of Egypt. In this battle, however, the British army suffered a great calamity in the loss of its general. This officer was at once beloved and esteemed by the soldiers whom he commanded; he preserved the strictest military discipline, while at the same time he secured the attachment of his troops by his obvious anxiety for their welfare. Early in the revolutionary war he had been employed on the Continent. He commanded the advanced guard in the action on the heights of Cateau, and he conducted the march of the guards from Deventer to Oldensaal in the retreat of the British troops in 1794. In the following years, till 1797, he commanded in chief in most of the successful enterprises of the British in the West Indies; and on his return to Europe he was invested with the rank of lieutenant-general, and appointed to the command of the forces in Ireland. In this station he made great efforts at once to protect the people and restore discipline to the army, both of which the violence of faction had induced the rulers of that country to neglect. Though a man of simple manners, yet he possessed great independence of character, and did not hesitate to express, in public orders, the indignation which he felt on observing the disorder and consequent misery which had been introduced into Ireland, by encouraging the licentious insolence of the troops towards persons accounted disaffected to the government; freely informing the army in that country that they were become formidable to every one but the enemy. In the expedition to Holland he displayed military talents which excited the admiration not only of his own army, but of the generals who were opposed to him.

After the death of Sir Ralph Abercromby, the command devolved upon General Hutchinson, who lost no time in proceeding towards Alexandria, where the principal force of the enemy was now concentrated. In the mean time the town and castle of Rosetta were taken by a division of the British army under Colonel Spencer, aided by a body of Turks. The French garrison, amounting to eight hundred men, made but a feeble resistance, and retired to the right bank of the Nile, leaving a few men killed and prisoners. While such was the state of affairs in the neighbourhood of Alexandria, Admiral Blakenet, with a considerable force from the East Indies, ef-

fecting a landing at Suez. The admiral had been separated from the rest of his squadron in the dangerous and difficult passage of the Red Sea; but before the end of April he was joined by a large reinforcement under the command of General Baird, who had with him Colonels Wellesley and Murray, and other officers of distinction.

As the capture of Grand Cairo, next to that of Alexandria, was a great object with the allies, a force was detached early in May for its reduction. On the 9th General Hutchinson, with four thousand British and an equal number of Turks, attacked the French near Rhamanieh; and the latter being driven in, retreated in the night towards Cairo, leaving a small garrison at Rhamanieh, which on the following day surrendered to the British. The loss of the English on this occasion did not exceed thirty men. About the same time a body of French and Copts, who had moved forward from Cairo to attack the Turks, were defeated by the grand vizier, who was essentially assisted by Colonel Murray and other British officers. The French are said to have lost fifty men, and the Turks about thirty in this action. The whole number of French engaged amounted to nearly five thousand, and the Turkish army to about nine thousand.

From various causes, it was the middle of June before the British army under General Hutchinson reached the vicinity of Cairo, where he found the works very much extended, though the garrison did not exceed five thousand in number. The capitan pasha at the same time invested Gizeh, a suburb of Cairo, on the left bank of the Nile, and the grand vizier took a position within cannon-shot of the city. Thus invested on every side, the garrison, on the 22d, sent a flag of truce to the English general, offering to treat for the evacuation of Cairo upon certain conditions. After a negotiation of several days, the surrender was finally agreed upon in a convention of twenty-one articles; the substance of which was, that the French army at Cairo and its dependencies were to be conveyed in the ships of the allied powers, and at their expense, together with their baggage, arms, ammunition, and other effects, to the nearest French ports in the Mediterranean; and of this convention General Menou was to be at liberty to avail himself. The port of Alexandria was all that now remained in possession of the French; it was attacked by sea and land, and at length surrendered by capitulation on the 2d of September.

By the time when intelligence of this event reached England, the views of men had been turned to a new state of things. Administration had seriously entered into negotiations for peace, which were conducted by Lord Hawkesbury on the part of Great Britain, and M. Otto, who resided in London as agent for the French prisoners of war, and who was now intrusted on the part of the French with this important business. The whole was managed with such secrecy, that not even persons who held official situations, except those immediately concerned, were acquainted with the state of the negotiation; and the lord mayor of London was the first person out of the cabinet to whom the result was communicated. Thus no unfair advantage could be taken; and this treaty stands almost singular on our records, since, at a period when the practice of gambling in the public funds was, from the wide extension of public credit, more predominant than at any previous crisis, not a single instance occurred of any sinister practice. By the preliminary articles, which were signed at London on the 1st of October, by M. Otto on the part of the French republic, and Lord Hawkesbury on the part of his Britannic majesty, Great Britain agreed to the restoration of all her conquests, the island of Trinidad and the Dutch possessions of Ceylon excepted. The Cape of Good Hope was to remain a free port to all

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the contracting parties, who were to enjoy the same advantages; the island of Malta was to be evacuated by the British troops, and restored to the order of St John of Jerusalem; Egypt was to be restored to the Ottoman Porte; the territory of Portugal was to be maintained in its integrity; the French troops were to evacuate the territories of Rome and of Naples; the republic of the Seven Islands was recognised by France; the fishery at Newfoundland was re-established on its former footing; and, finally, plenipotentiaries were to be named, and to repair to Amiens, in order to proceed with the arrangement of a definitive treaty of peace, in concert with the allies of the contracting parties. During the war, negotiations for peace had so repeatedly proved unsuccessful, that a general incredulity prevailed with regard to the possibility of such an event; and accordingly all merchants conducted their speculations upon the supposition that there existed no probability of an immediate termination to the war. The state of the present negotiation had been so carefully concealed, that, when the official intelligence of its issue was transmitted throughout the country, it excited everywhere the utmost astonishment, but nevertheless produced, almost instantaneously, the most unbounded expressions of joy among all orders of persons. The zealous adherents of the late administration, indeed, were upon the whole rather dissatisfied; but their voice was overwhelmed in the general exclamations which took place, and far surpassed the expressions of joy which had occurred at the termination of any former war; and, as an abundant harvest was at the same time reaped, the prospect of plenty added greatly to the public joy.

CHAP. XVII.

REIGN OF GEORGE III.—FROM THE PEACE OF AMIENS TO THE RENEWAL OF THE WAR IN 1803.

Meeting of Parliament.—Speech from the Throne.—The Peace impugned by Mr Windham.—Debates on this subject.—Definitive Treaty.—Suspicious conduct of Bonaparte.—Debates on the Definitive Treaty.—General Conduct of Administration.—Effects of the Change of Ministry.—Consequences of the Peace.—Conduct of the French Government.—French Expedition to St Domingo.—Abominable cruelty and oppression practised by the invading force.—Conduct of the French in Europe.—Despotism of Bonaparte.—The First Consul and the English Newspapers.—Meeting of Parliament.—Execution of Despard and his Associates.—Difficulties experienced in executing the Treaty of Amiens.—Bonaparte's Conversation with Lord Whitworth.—Transference of Louisiana.—Extraordinary Scene between the First Consul and the British Ambassador.—Ultimatum of the British Court.—War renewed.—Declaration in justification of the renewal of the War.—Situation of the Ministry.—State of Parties.—Menace of Invasion.—Preparations for encountering the threatened attack.—Patriotism of all classes.—The army, the militia, the army of reserve, and the volunteers.

Parliament assembled on the 29th of October. By this time the new administration, from the mildness of their conduct, and their successful negotiations for peace, had obtained a powerful hold on the affections of the public. When they first came into office they appeared to have obtained a promise of support from their predecessors; but this kind of gratuitous support could scarcely be expected to be very consistent or uniform. Mr Pitt himself continued to give countenance to the minister; but some of his friends avowed their dissatisfaction on account of the treaty with France. The speech from the throne announced the conclusion of the negotiations commenced during the last session of parliament; and expressed much satisfaction that the differences with the

northern powers had been adjusted. It stated that the preliminaries of peace had been ratified between us and the French republic; that whilst this arrangement manifested the justice and moderation of our views, it would also be found conducive to the interests of the country and the honour of the British character; and that as the provision for defraying the expenses of maintaining an adequate peace establishment could not be made without large additional supplies, all possible attention would be paid to such economical arrangements as were consistent with the security of his majesty's dominions. The speech concluded with applauding the operations of the last campaign, and particularly the glorious issue of the expedition to Egypt, which, however, has deserved and obtained a more fitting commemoration.

In the House of Lords the motion for the usual address passed unanimously. In the House of Commons, both Mr Fox and Mr Pitt declared that they joined in the general joy which the peace had produced, and gave it their approbation. On the other hand, Mr Windham differed as to there being any just cause for general joy and exultation; and he disapproved of the preliminaries of peace signed with France, as well as of the address, in as far as it implied an approbation of them. It behoved him to give his reasons for dissenting on so material a point. To stand as a solitary mourner in the midst of public rejoicings, to wear a countenance clouded with sadness whilst all others were lighted up with pleasure, certainly appeared ungracious. But were the circumstances of this peace such as justified our exultation upon former occasions? To him they appeared in a quite contrary view; and when he was desired to illuminate, he first endeavoured to learn whether it was to light him to a feast or a sepulchre. It was his firm persuasion, that in signing this peace his friends had put their signatures to the death-warrant of the country. He knew the inconsistency of human affairs, nor was he profane enough to set bounds to the dispensations of providence; but neither could he foresee what changes might be wrought in the disposition of the people of England by intrigues from without or convulsions from within; and upon no rational view could he see his way out of the evils it would entail upon this country. The only thing necessary to enable France to divide with us the empire of the seas was a participation of our commerce, and this she would effectually secure by the present peace; whilst, by the surrender of our conquests, we had thrown out of our hands the only means to prevent it, the extension of our colonial system. The motives which induced ministers to conclude these preliminaries, he knew not; some of them he had heard, but was not convinced, as they appeared wholly insufficient. If they were forced to accept this peace through inability, their conduct was the more excusable; and we had to thank them, not for what they had acquired, but saved to their country. If they could prove that, by ceding foreign colonies, they had preserved objects nearer and dearer to us, as Portsmouth, Plymouth, and Ireland, and the soil of England, from ravage and desolation, they were entitled to gratitude instead of censure, and had established, not a ground of apology, but a claim to thanks. But such a plea he did not recognise; and how far they were actuated by necessity, would be a matter for future discussion.

Mr Addington described the observations of Mr Windham as premature, since the articles of the treaty were not before the house; and, without referring to the terms of the peace, he affirmed, that all we had given up would have afforded us no sort of security against the dangers apprehended by Mr Windham, and that the best counterpoise to the power of France consisted in the preservation

of our constitution, in our industry and skill, and in the right direction of our resources. Mr Sheridan, notwithstanding the unanimity with which the address was consented to, believed, that if men sincerely delivered their opinions, there never was a period of less real unanimity. The peace had been spoken of as glorious and honourable. It was a peace of which every Englishman might be glad, but no one proud; and it involved a degradation of national dignity such as the war might lead us to expect, though perhaps it was as good as any minister could make in the circumstances in which we were placed.

His majesty having by message communicated the preliminary treaty with the French republic, an address of thanks was moved on the 3d of November, when Earl Spencer expressed his regret at differing in sentiment from the ministers, with some of whom it was his pride to have coincided in principles, and co-operated in conduct. The great object of Britain, in former wars with France, had been the preservation of the balance of power. This was the point which had been considered, from king William's confederacy against Louis XIV. to the present time; and to insure the maintenance of such an equilibrium, it was not only necessary that Britain should not be left by the peace in a worse political situation than in the beginning of the war, but that her strength, possessions, or acquisitions, should continue in proportion as high as those of France. In the present war, the acquisitions of France had been infinitely beyond all former conception; she had, by her arts or her arms, subdued the Netherlands, Holland, the left bank of the Rhine, and a great part of Italy; her power, compared with that of Great Britain, exceeded what she had been allowed to retain at any former treaty of pacification; nor could we be secure, when such immense acquisitions had been left to France, without anything like an equivalent left to this country. He therefore condemned the conditions of the peace now concluded, as of very great inequality, whether with reference to the relative state of France and the Continent, or to that of France and England. Lord Pelham thought that the terms of peace were the best which could be procured, even in favour of our allies. Portugal was safe, the Roman and Neapolitan territories had been released from the French yoke; the French were expelled from Egypt, by which our Ottoman ally had been saved; and with regard to Malta, its retention would have been more injurious than beneficial to England, as a powerful garrison would have been requisite for its protection. In the East and West Indies we had been triumphant by sea and land; and our possessions had received important additions by the conquests we had made. As to the security of the peace, we had every security which could be expected; and besides, it was the policy and interest of France to preserve it. Lord Grenville thought that, as Britain was in a prosperous state, we ought to have obtained more honourable terms of peace, because we were in a condition to demand them. It was far from his intention to undervalue the acquisitions of France; on the contrary, he thought them much more important than was generally esteemed. She had made the Rhine the boundary of the empire, and extended her territories beyond the ambition of her monarchs, having her frontiers protected by dependent republics and tributary kings. On our side we had triumphs no less brilliant and striking. We had multiplied our colonies, and our navy sailed the seas invincible; we had rescued Egypt, captured Malta, possessed ourselves of Minorca, and shut up the Mediterranean from the ships of France and Spain; the Cape of Good Hope, the key of the East, was ours; in the East Indies we had every thing except Batavia, which we might also have possessed had we thought it worth the cost of an expedition; in the

West Indies we had Martinico, Trinidad, and other islands; upon the continent of South America we had an absolute empire, in extent almost equal to that power to which we restored it. Such were the colonial possessions acquired by the war; and if Europe could not have been restored to her pristine state, these ought to have been retained as a counterpoise to the power of France. He denied the fairness of comparing the present treaty with that proposed at Lisle. We now gave up Surinam, Malta, and Minorca. At no time during the contest was the spirit of the country so depressed as at the negotiation of Lisle. A variety of causes combined to produce that despondency; the stoppage of the bank, the defection of our allies, and, above all, the mutiny in the fleet. The measure, therefore, was defensible on the score of necessity; but this was not the case at present; yet we had given to the French the only thing they wanted, the means of creating a navy, and of rivalling us in our commerce, while we had obtained nothing in return. The Earl of Moira was of opinion, that though the terms of the treaty were inadequate, they were unavoidable. Lord Nelson observed respecting Malta, that when he was sent down the Mediterranean, this island was in the hands of the French; and on his return from Aboukir, it was his first object to blockade it, because he deemed it an invaluable service to rescue it out of their possession. In any other view it was of no consequence, being at too great a distance from Toulon to watch the French fleet from that port; and in time of peace it would have required a garrison of seven thousand men, and in war as many more, without being of any real utility to us. The address was carried by a great majority.

When the same subject was discussed in the House of Commons, Lord Hawkesbury ascribed the origin of the war to the interference of France in the affairs of other nations; but the state of that country was now considerably amended, and it was impossible to look at the present condition of France without being convinced that we had at least effected this change. He then expatiated on the advantages we had gained, and the good faith we had maintained with our allies, releasing them from express stipulations when they were exposed to danger by continuing faithful to their engagements. With respect to Minorca, he did not consider that island as an acquisition worth retaining. Of Malta he spoke with less confidence, as, from its impregnable state, it was certainly of political consequence in the Mediterranean; but it was no source of trade and opulence; and, connected with the prosperity of the Levant, its consequence was considerably diminished. In a word, considering the results of the war, if the term glory were not taken into account, we had at least made an honourable peace; we had been engaged in a tremendous contest, and had come out of it, considering the circumstances, with advantage. Earl Temple considered those who had signed the peace as having signed the ruin of their country. Amongst the ill consequences likely to result from it, he lamented the encouragement given to republican principles; and as to the various ostensible objects of the war, not one of them had been accomplished. Mr Pitt said that it was undoubtedly the duty of government, in negotiations, to obtain the best possible terms; but it was difficult to know how far insisting on some lesser points might endanger the whole treaty; and he declared that he would rather close with an enemy on any terms not inconsistent with the honour of his country, than continue a war for any particular possession. He did not pretend to state that this peace fully answered all his wishes; but the government had obtained the best conditions they could, and the terms for which we con-

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Reign of George III. tended would not have justified ministers in protracting the war. Mr Fox declared himself satisfied with the terms of the treaty, and asserted, that no perseverance in the war would have enabled us to make peace upon better conditions. There were persons who lamented the peace as glorious for France; but if it were so, and not inglorious to England, it gave him no concern. The opinions of men depended in a great degree upon their conceptions of the causes of the war; if one of its objects was the restoration of the accursed despotism of France, to him it was another recommendation of the peace, that it had been obtained without the accomplishment of such an object. In the terms and tone of the present treaty he perfectly coincided. He approved the terms, and thought the noble secretary had wisely tempered firmness of conduct with moderation of tone; but further than this he could not go. He would by no means agree respecting the time in which the treaty was made: it came many years too late. He would put it to the house, whether, at the time the opposition was most railed against for advising pacific measures, we could not have made peace on terms equally advantageous with the present. Would not France, on the breaking out of the war, have acceded to any? Would she not then have relinquished Holland, and perhaps abandoned her designs on the Netherlands? But, since that eventful period, could we not have negotiated better after the surrender of Valenciennes; and again, at Lisle, when we only failed from the extravagant pretensions of administration? In January 1800, the first consul made a direct overture, and we returned an answer, that the most effectual mode of facilitating peace would be to restore the Bourbons. Did we hint then at the possession of Ceylon or Trinidad? Would not Bonaparte have added these? Yes, and the Cape into the bargain. We then might have had Egypt by the convention of El Arish. The gallant Abercromby, indeed, would not have fallen covered with laurels in the lap of victory, nor would our brave army have acquired immortal honour; but we should have gained Egypt without the loss of blood or treasure. The first consul might not perhaps have relinquished the Netherlands, nor the left bank of the Rhine; but in Italy he had only the Genoese territory, and we had nothing then to resist to the south-eastward of the Alps, and our allies were victorious on the frontiers of France. At that time the instability of the government operated with us; but neither its stability nor its instability were of any real consequence. None of the convulsions and changes of the French revolution produced any material difference in her relation with foreign powers. She had at the beginning made peace with Prussia, and sedulously preserved it during the stormy times succeeding its ratification. We were told by the ministers to pause, and we did pause from January 1800 to October 1801, and added seventy-three millions to our national debt since we returned that impertinent answer to the overtures of Bonaparte; and this pause cost five times as much as all the Duke of Marlborough's campaigns.

To negotiate the definitive treaty of peace, the Marquis Cornwallis went to Paris towards the close of the year, and thence proceeded to Amiens, where the negotiations went on very slowly, and were not concluded till the 27th of March 1802. The chief difficulty occurred with regard to Malta. But it was at last agreed that it should be restored to the knights of the order of St John of Jerusalem, under the protection and sovereignty of the king of Naples; that it should be under the guarantee of France, England, Russia, Spain, Austria, and Prussia; and that if the order should not have sufficient troops to defend the island, the guaranteeing powers should each contribute an equal portion of troops, the officers to be appointed by the grand

master. It was settled that Malta should be a neutral port, that one half of the garrison should be Maltese, and that there should be no French nor English body of knights, or tongue as it is called. The king of Naples, however, was to be invited to garrison the island with two thousand men for one year from the restitution of the knights; which was to take place in three months after the exchange of the ratifications of the treaty. In other respects the definitive treaty differed little from the preliminaries formerly agreed to.

During the dependence of the negociation, the first consul, Bonaparte, had taken some steps which indicated little moderation, and showed that it would be difficult to remain upon terms of amity with him, while the desire of extensive dominion which at present governed his councils seemed of too restless a character to allow much hope of tranquillity to the world. Without waiting till a definitive treaty of peace had been concluded, he sent a large army to St Domingo, which obliged Britain to dispatch a powerful fleet to the West Indies in order to watch its motions. On the Continent his measures were not less arbitrary. A considerable portion of Lombardy, with Milan as its capital, which had been erected into what was called the Italian or Cisalpine republic, and contained some millions of people, was now united to France, by the form of nominating Bonaparte to the office of president over it; a measure which at any other period would have involved all Europe in war: but at present no state ventured to interpose, and the British ministers finding no power in Europe disposed to resist this step towards the permanent aggrandisement of France, and being themselves anxious to restore peace, did not interrupt the negociations on this account.

On Thursday the 29th of April Lord Pelham, by his majesty's command, laid before the House of Lords a copy of the definitive treaty of peace between his Britannic majesty and the French republic, and his Catholic majesty and the Batavian republic, signed at Amiens on the 27th of March. Several debates occurred in that house upon the subject; and at length, on the 15th of May, Lord Grenville moved the order of the day for the house to take into consideration the definitive treaty. He remarked, that it might be asked of what use was discussion, now that peace was concluded? Was it to abrogate, could it correct the treaty? To this question he answered, that this unfortunate treaty had been ratified by his majesty, and was therefore irrevocable; to its terms, however injurious, we were bound to accede. By evasion we should but add disgrace to disaster, and with the loss of national honour fill up the measure of national calamity. He wished not to impede the execution of the treaty, but to demonstrate to that house its dangerous tendency; to ascertain the situation in which it left the country; to point out the perils which impended, and the safety which yet remained. His objections to the preliminary treaty he had already stated; but to the definitive treaty there were objections yet more formidable. The two bases of negociation, the *status ante bellum*, which signified the actual situation of the parties previous to hostilities, and the *uti possidetis*, which referred to their position during the pacification, had both been applied in the most prejudicial manner to this country. With regard to herself, England had adopted the *status ante bellum*; with regard to her rival, the *uti possidetis*. England had ceded her own conquests, and confirmed to France her new acquisitions. France possessed dominion on the Continent; we had, to oppose that dominion, the colonies of France and Spain. It would have been just that France should purchase our colonial by her continental sacrifices. He contrasted the definitive treaty with that of 1763. It had been an inviolable principle with Lord Chatham to make the prelimi-

Reign of George III. nary as much as possible the definitive treaty. Our negociators had treated with France during a naval armistice. Immediately subsequent to the preliminary treaty, France had sent an armament to the West Indies, and obliged England to destine for the West Indies also a naval force more than double any squadrons which had been sent during the war. The necessity of keeping in the West Indies thirty-five sail of the line was the first fruit of the peace. It was obvious that the definitive treaty contained concessions more important than the preliminary articles; and it was palpably the object of the French government to exclude the commerce of this country from the continent of Europe. With respect to the situation in which Portugal and the Prince of Orange were left by the treaty, it had been said that it was a pity, and that the articles were read with regret. The proposed indemnity to the Prince of Orange was evidently at the option of France; for the Cape of Good Hope, no effort had been made to insure its independence; and Malta, whose independence had been expressly stipulated, with the provision that it should be guaranteed by one of the powers of Europe competent to its protection, was finally placed under the guarantee of six powers, who never could be brought to agree on the subject of it. Its restoration to the order was nominal and futile. The order of Malta was virtually extinct; it would be subject to the nomination, the influence, and the dominion of France. He then proceeded to take a retrospective view of the situation of this country at the commencement of the negociation. With a colonial territory of an immense extent, we had, in the very conquests achieved by our arms, the means of perpetuating our victories. From the West Indies, the produce of which amounted to two millions annually, a considerable revenue had arisen, which was now lost. By our naval superiority we had controlled the movements of the French fleet; they were now at liberty to steer for the West Indies, and we were under the necessity of sending fleets to watch them. We were in possession of resources adequate to the prosecution of the war, and held in our hands the means of extorting a just and reasonable peace. Instead of improving these advantages, we had resigned to France the preponderance of power on the Continent, established her sway in Italy, and annexed to her important possessions in India. Even our right of sovereignty in India was no longer recognised. It had been suggested that this right was guaranteed by the silence of the definitive treaty; a mode of argument which appeared equally strange and singular. He affirmed that the sovereignty of the Cape was necessary to the safety of our territories in India, and instanced the war with Tippoo Sultan, when a corvette had been sent to the Cape, from which fresh troops were immediately dispatched, who landed, marched, and co-operated at the siege of Seringapatam. By ceding the Cape to Holland, we had ceded it to France. In the West Indies we had restored to France Martinique and Tobago, and facilitated the recovery of St Domingo. France was also mistress of Louisiana, and in reality of Florida, which could not, from its vicinity to Louisiana, remain subject to Spain; and she possessed the key of Mexico, which she might enter at any period. If we turned to the Mediterranean, it would be impossible to send a single ship there without the permission of France. We were stripped of Majorca, Minorca, and even of the island of Elba; we were excluded from Leghorn, and deprived of the means of maintaining a fleet in that sea; the king of Sardinia could no longer open to us his ports. The victory obtained by Lord Nelson at Aboukir was to be attributed to the assistance rendered by the king of Naples; and in return for these services, the British government had stipulated that the French republic should evacuate his dominions,

without stipulating that they should not return to them. In short, whatever the valour of the British navy had won, the incapacity of the British ministry had lost. Reign of George III.

The Duke of Norfolk expressed his hope, that, now the sword was restored to its scabbard, it would not again be unsheathed for the acquisition of a station in the Mediterranean. Lord Auckland, in reply to Lord Grenville, stated, that it was an error to hold that all treaties between nations were annulled by war, and that, to be reinforced, they must be specially renewed on the return of peace. It was true, that treaties, in the nature of compacts and concessions, the enjoyment of which has been interrupted by the war, were thereby rendered null; but compacts which were not impeded by the course and effect of hostilities, such as the rights of a fishery on the coasts of either of the belligerent powers, the stipulated right of cutting logwood in a particular district, were not affected by war. There were also circumstances which might authorize the dissolution of treaties, without any rupture between the two parties. It had therefore been observed by Vattel and other writers, that treaties cease whenever an essential alteration in either of the contracting parties takes place. Applying this doctrine to Savoy, Switzerland, and other countries, the temporary victims of the French revolution, he admitted that the definitive treaty contained not a single provision, direct or indirect, for the renewal of treaties which had subsisted previous to the war; but it was not true that, by the non-renewal of our treaties with Holland, the vessels of that republic would be exonerated from the ancient practice of striking their flag to British ships of war in the British seas; for that practice had existed independently of the treaty of 1782, or even of the treaty of Breda in 1767, which were only recognitions of a previously admitted claim. The same remark was applicable to the sixth article of the treaty of 1764, by which the states-general promised not to obstruct the navigation of British subjects in the Eastern seas. That article was no new grant, but an acknowledgment of a right, and a notification to merchants that they would not be disturbed in the exercise of that right. With respect to France, the commercial treaty of 1786 had expired, but not till it had reached the natural era of decay; nor would he feel solicitude for its resuscitation, unless our negociator at Amiens should prove that the French manufacturers were able, in 1802, to resume the competition to which they were unequal, in 1786, under the existing tariff. With regard to our sovereignty in India, it had been confirmed and extended by various treaties, recognised by all the powers of Europe and India who had accepted privileges from us, and finally established by undisturbed possession. On the contrary, Lord Carnarvon represented the treaty as pregnant with danger to the country. It had been hoped, that some articles relative to our allies, and involving our own national honour, would be altered; but the definitive treaty, instead of realizing, had annihilated these hopes; concession was heaped on concession, and disgrace on disgrace. By omitting to renew former treaties, ministers had unadjusted all former adjusted disputes, and, without the customary acknowledgment of our rights, had left us to the honour and justice of France. Lord Ellenborough expressed much surprise that the non-renewal of treaties should have been urged as a serious objection to the definitive treaty. To what purpose was this solemn nonsense to be revived? Were not these treaties replete with articles wholly inapplicable to the present political state of Europe? For himself, he could as well think of the revival of the condition of mankind, in some remote period, as of the ancient treaties, which had become inapplicable and obsolete. Our sovereignty in India rested on the rights of conquest in legitimate war, upon the repeated recognition

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The same subject, after being repeatedly alluded to, was finally discussed in the House of Commons on the 13th of May. Mr Windham attacked the treaty in several of its prominent parts. With regard to Malta, he contended, that it must ultimately fall into the hands of the French. The little order of Malta, which contained in itself the great characteristic and distinctive qualities which the French revolution had subverted, was now destroyed. The German knights had already refused to serve in a body so degraded and debased; the Neapolitan soldiers would form no security for the independence of the island; the state of Malta was a virtual surrender, and our position in the Mediterranean untenable. The Cape of Good Hope was ceded, in full sovereignty, to the Dutch, who were thus at liberty to resign it to France. Our Indian empire was our sheet anchor; and whatever was necessary for its preservation was of the last importance. The disadvantages upon our side he then contrasted with the advantages in favour of France. By the restitution of Cochin China to the Dutch, they had acquired the means of annoying our possessions in the East Indies. In defining the boundaries of France and Portuguese Guiana, ministers had enabled France to obtain her great object, the navigation of the river Amazons; and the Portuguese settlements were left exposed to the foe. He deplored the cession of Louisiana to France, which, considering the almost indefinite extent of Guiana, was a surrender of the two greatest rivers in the world; the Mississippi in the north, the river of Amazons in the south of America. In aggravation of this thoughtless prodigality, ministers had abandoned the whole continent of Europe to France. We already knew the French too well to doubt that they would scruple what means they used to accomplish their ends. Had they not fraudulently obtained the restitution of Porto Ferrajo to the king of Etruria, in order to secure it to themselves? Regardless of stipulations and treaties, they had seized on the island of Elba; and, to bestow a compensation on the king of Etruria, had extorted Piombino from Naples. The French were a new race of Romans; and in ten years they had even acquired more than the Romans were able to achieve in fifty-three. On the map of Europe two nations only stood erect; and of these, the one from distance more than from strength. Austria was indeed still rich in resources, but destitute of foreign aid. There was no single power which could enter the lists with France. In the first conflict it would be crushed by her tremendous mace. He repeated, that we had given away two continents, and that the object of France obviously was the attainment of universal empire. He admitted that the peace must be observed, now that it had been entered into; but concluded with a motion for an address, expressive of disapprobation of it.

Lord Hawkesbury observed, that from some observations of Mr Windham's, it would seem that whenever any continental power, however unconnected with us, became involved with France, it was our duty to volunteer our interference and assistance. That we were deeply interested in the destiny of the Continent, he was willing to admit; but he conceived our interference with its commotions to be optional, neither instigated by necessity nor extorted by honour. At the end of nine years of war, we had found ourselves deserted by our allies; and with the first intimation which his majesty's ministers received of the new constitution of the Italian republic, they had heard of its acceptance by the courts of Vienna, Berlin, and Petersburg. Under these circumstances, he submitted, whether it was incumbent on us to continue the war on account of the Italian republic. The cession of Louisiana by Spain to France

was another ground of complaint. That province had originally been a French colony, when the Mississippi was the boundary between it and Great Britain; and it had been ceded by France to Spain, in a private convention, between the preliminaries and the definitive treaty of 1763; a proof that conventions of this nature, if not right, were at least not new. The value of Louisiana was at present only nominal; as a naval station it was allowed to be insignificant; and its vicinity to America was calculated to diminish, rather than augment, the attachment of that country to France. Concerning the non-renewal of certain treaties and conventions, he observed, that the principle on which treaties had usually been renewed appeared not to be understood. The treaty of Westphalia formed a distinct era in the history of Europe; and in order to ascertain the relative situations of the different powers, it had been customary to renew that treaty, together with any particular conventions subsequent to it. But it was to be considered, that formerly all preceding treaties had been renewed by the other powers of Europe, whereas in the present war no European power had done so; and consequently, if we had renewed former treaties, we only should be bound whilst other nations were free. By renewing former treaties, we should have been forced to sanction all the recent encroachments of France; and by sanctioning the treaty of Luneville we should have been accessory to the dismemberment of the Germanic empire. His lordship represented the definitive treaty as coinciding with the preliminary treaty which had previously received the sanction of the house. In regard to the permanence of the peace, he was willing to admit, and to deplore, that, in the present state of the world, any peace must be insecure; but the precarious tenure on which this blessing was to be held formed no reason for rejecting it. He concluded with moving an address to his majesty, to testify the satisfaction of the house on the conclusion of the definitive treaty. Mr Dundas also opposed Mr Windham. In his judgment, however, the Cape and Ceylon formed our two great bulwarks, and he never would have consented to the surrender of the former. The cession of Malta was also to him a subject of equal regret; and to the relinquishment of either of those places he should have refused his assent had he continued in administration. But he would not support the address moved by Mr Windham, because it contained an invective against the peace. Sir William Young contended, that when a standing army was deemed essential to the preservation of peace, it was proper that the people should be informed of the state of affairs which justified such a measure. Lord Castlereagh remarked, that our grand object, from the commencement to the close of the war, had been the establishment of general security; and that the gradual extinction of jacobin principles, and the gradual restoration of order and tranquillity, had been given as sureties for the peace. With regard to the territorial acquisitions of France, they might eventually become of infinite importance; but they were not pregnant with immediate mischief, and could only be the sources of distant danger. Mr Addington desired not that the treaty should be praised; he had never regarded it with sentiments of exultation, nor lavished on it panegyric; he was content that the honour of the country was unsullied by the measure which had been adopted. He acknowledged that the territorial acquisitions of France could not be viewed without regret; but there were events which we could not control, and dispensations in which we must acquiesce; and he should rejoice to see the resources of this country economized by peace. Mr Sheridan treated the subject with some gaiety. He said he supported the peace, because he was convinced that ministers could obtain no better; their predecessors

had left them to choose between an expensive, bloody, fruitless war, and a hollow, perilous peace. He attacked the new oppositionists, who had been supporters of the former administration, and demanded, for what did we go to war? Why, to prevent French aggrandisement: Have we done that? No. Then we are to rescue Holland: Is that accomplished? No. Brabant is the *sine qua non*: Is it gained? No. Then come security and indemnity: Are they obtained? No. The late minister told us, that the example of a jacobin government in Europe, founded on the ruins of a holy altar, and the tomb of a martyred monarch, was a spectacle so dreadful and infectious to Christendom, that we could never be safe while it existed, and could do nothing short of our last effort for its destruction. For these fine words, which had at last given way to security and indemnity, we had laid out near two hundred thousand lives, and nearly three hundred millions of money—and had gained Ceylon and Trinidad. But one grand consolation remained. Bonaparte was to be the extirpator of jacobinism; the champion of jacobinism was to become a parricide; the child of sin was to destroy his mother; he had begged pardon of God and man, piously restored bishops with the salaries of curates, and penitently extorted of them a solemn oath to turn spies and informers in his favour. It had been said, that France must have colonies to be afraid of war; that that is the way to make Bonaparte love peace. He has had, to be sure, a rough military education; but if you put him behind the counter a little, he will mend exceedingly. When he was reading the treaty he thought all the names of foreign places, Pondicherry, Chandernagore, Cochin, Martinico, all cessions. No such thing; they are so many traps or holes to catch this silly fellow in, and make a merchant of him. At this moment, nobody in Britain knew who was minister, as the present ministers continued to identify themselves with the former. Of the late minister, he said that none more admired his splendid talents than he did. If ever man was formed to give lustre to his country, he was that man. He had no low, little, mean, petty vices; he had too much good sense, taste, and talents, to set his mind upon ribbands, stars, and titles; he was not of a nature to be the tool and creature of any court. But great as were his talents, he had misapplied them in the politics of this country; he had augmented our national debt, and diminished our population. He had done more to abridge our privileges, and to strengthen the crown at the expense of the constitution, than any minister he could mention. He concluded by moving, as an amendment to Lord Hawkesbury's address, that it was the opinion of that house, that the omission of various opportunities of negotiating peace with advantage to this country, more especially the rejection of the overtures made by the first consul of France in January 1800, appeared to have led to that state of affairs which rendered peace so necessary as to justify the painful sacrifices which his majesty had been advised to make for the attainment thereof. But the address proposed by Lord Hawkesbury was carried by a very great majority.

During this session of parliament the most important operation of finance consisted of the repeal of the tax upon income, which gave great satisfaction. Indeed, in their whole conduct administration conducted themselves with a degree of moderation and prudence which greatly conciliated towards them the minds of the public. On all occasions they defended the former ministry against the attacks of the old opposition; and, in return, they were supported by a very considerable number of the members of that administration, including Mr Pitt. At the same time they did not appear unwilling to enter into political connections with the members of the old opposition. Par-

liament was prorogued on the 28th of June, and dissolved on the following day. The elections which immediately succeeded exhibited the singular spectacle of an administration which avoided interfering in the choice of the members of parliament. The members and friends, however, of the old administration, together with their opponents, were abundantly active.

The effect of the change of ministry had by this time been very sensibly felt over the whole of the island. During the preceding ten years the minds of men had, in a greater or less degree, been kept in a state of constant alarm from the fear of plots and conspiracies against the government, and from the apprehension that a most dangerous disaffected party was at all times ready to burst forth into action, and that the British constitution was only preserved in consequence of the suspension of the *habeas corpus* act and other legislative restraints, aided by the extreme vigilance of administration, and of their friends, in repressing disaffected persons. Hence society existed under a sort of general apprehension and distrust; and persons originally unfriendly to the war suffered in all departments of business, and in every quarter of the country, no inconsiderable degree of political persecution. All this had now passed away. The new ministers suffered the penal and restraining laws quietly to expire, and the constitution to depend for support upon its own strength and the ancient provisions of the law; they gave themselves no trouble about the general sentiments of the people with regard to speculative subjects, and seemed desirous to conciliate the good will of all orders of the state. The consequence was, that the fears and anxieties which formerly existed about the safety of the constitution passed away like a dream; a universal attachment to the institutions of the country sprung up; and political animosities, being no longer fed by alarms artfully excited by the government, were, as if by a sort of enchantment, appeased and forgotten.

With regard to the effects of peace upon the British and French nations, these promised at first to prove favourable to the general interests of humanity. The French had successfully defended their own independence, and in their turn assailed those by whom it had been menaced, with such a persevering energy as secured to them a portion of respect from the British nation; whilst, on the other hand, the maritime triumphs of Britain had been so splendid, and the valour of her troops in Egypt so distinguished, as to secure to this country a high degree of consideration in the eyes of the French. The people of the two countries accordingly seemed eager to unite in habits of the most amicable intercourse; considerable numbers of Frenchmen came over to Britain; and multitudes of persons of all ranks hastened from Britain to visit a country which had of late years excited, in so remarkable a degree, the attention of all the nations of Europe, and had been the scene of such extraordinary transactions. On this reciprocal tendency of the two nations to abandon their animosities, a system of commercial intercourse might have been reared of a nature much more simple and perfect than that which had been created by Mr Pitt's treaty; and there is no reason to believe that any disposition existed, on the part of the British government, to stand aloof from France, or to avoid, for any political reason, the extension of our commerce with that country. Such an intercourse would have proved favourable to France in every possible way. It would have enabled her people to derive considerable assistance from the capital of British merchants, which would have been rapidly and liberally advanced towards promoting the culture of their most valuable productions; and even in a political point of view France must have been aggrandised by such a connection.

Reign of George III. What she wanted was a navy to defend her colonies, and to enable her to cope with Britain in the event of a future war; and this advantage she could only obtain by means of commerce, more especially with Britain.

But it soon appeared that a man may be qualified to lead armies successfully to battle, to overrun provinces, and to attain the envied title of a conqueror, who at the same time possesses but a moderate portion of magnanimity, self-command, or knowledge of the maxims of sound policy and the best interests of nations. The French government, instead of seizing the opportunity thus afforded of encouraging the people to become commercial and acquire wealth, and seeking to form a maritime power by opening their ports, and holding out to Britain a commercial treaty arranged on liberal principles, shut their harbours more closely than during the most violent period of the war. Vainly fancying that in this way they would enable their own manufacturers to rival those of Britain, they in fact only excluded their wines from the British market; and by thus losing a sure and ready mode of attracting riches to their country, they prevented the acquisition of capital by enterprising individuals, and ruined the very industry which they intended to encourage and promote. They idly thought that they were in this way limiting the trade of Britain, which, having all the rest of the world open to its efforts, could not be injured; and, in truth, by their narrow views and illiberal policy they only injured themselves. By similar miscalculation, or from a restless spirit of ambition, the French government sought aggrandisement by those efforts of violence which are only tolerable in the midst of war, but which in peace justly excite the jealousy and indignation of mankind.

One of the first enterprises of Bonaparte, in consequence of the peace, was an attempt to reduce under his power the island of St Domingo. During the revolution that great and fertile island had suffered the most severe calamities, which had terminated in the emancipation of the negroes; and the latter had formed themselves into a sort of regular government, at the head of which was one of their own race, Toussaint-Louverture, a man of humanity, and possessed of considerable talents. Reports were circulated in Europe that he wished to render St Domingo independent of France; but of this there is no proof, and it is probable that his chief offence consisted in the general estimation and personal consequence to which he had attained, and that the despotic spirit of Bonaparte could brook no appearance of independence or rivalry in any part of the French territory. Nor was it unnatural that, under a military government, force should have been employed in preference to any method of conciliation. At the end of the year 1801 an army of twenty-five thousand men was sent to St Domingo; and as single ships and small squadrons continued to sail during the winter, loaded with troops, it is believed that nearly forty thousand men were employed in what might be called the first division of the expedition. The accounts of their proceedings are very defective; but, from all that has transpired, the conduct of the French appears to have been extremely disgraceful. The negro chiefs having refused unconditional submission, they were attacked, and defeated in several battles; and disunion, as usual, following disaster, Toussaint was at last induced to enter into negotiation. The terms of the treaty were concealed; but, as he was still at the head of a respectable force, it is believed that not only the possession of his personal freedom, but the undisturbed enjoyment of his property, was secured to him, and that his followers were promised a full indemnity. This occurred in the beginning of May 1801. The French general, Le Clerc, brother-in-law of the first consul, no sooner found the negro chief in his power, and the tran-

quillity of the colony apparently re-established, than he committed one of the basest acts of treachery that ever disgraced a government. The abdicated general was accused of a conspiracy, though it was evident that from the period of his submission to that of his seizure he had not had time to meditate, much less to organize, such a measure; and on the 12th of May Toussaint and his whole family were put on board a frigate, and shipped off for France, where he soon died of a broken heart in a prison. The negroes perceived that they were deceived and betrayed; and as an attempt was made to reduce them again into a state of slavery, after they had enjoyed freedom for several years, no doubt could remain as to the real object for which the expedition had been fitted out. The chiefs who had been prevailed on to desert Toussaint, and whose desertion had led to his surrender, now justly fearing that they were destined to share the miserable fate of their deluded associate, betook themselves to flight;—the whole island revolted;—pestilence came in aid of these avengers of tyranny and falsehood;—and the miserable instrument of the first consul's cruelty fell himself the victim of the climate. After a series of horrors and atrocities, even darker and deeper than those which blacken the memory of Robespierre, Marat, St Just, and Carrier, and which will for ever remain a disgrace to the French character, the republic had to regret the loss of sixty thousand of her best troops, in a vain attempt to subdue a colony which might, with temper and humanity, have been conciliated and retained.

In Europe the conduct of the French government was scarcely less arbitrary. The whole fortresses of Piedmont were dismantled, and that country was ultimately annexed to France; and the duchy of Parma and Placentia was treated in the same way. Meanwhile the Swiss, whose form of government had been altered in imitation of that of France, wished to restore the ancient constitutions of the cantons, under which their ancestors had prospered during so many ages. But their present leaders, who had risen to power under the protection of France, solicited the interference of Bonaparte in their favour; and he accordingly sent a numerous army against Switzerland, and, notwithstanding the remonstrances of the British court, placed the sovereignty in the hands of his own dependents or adherents. After all their struggles for freedom, the French nation also submitted to a confirmed military despotism. When Bonaparte assumed the appellation of first consul, it was under the declaration that the office, in terms of the constitution then promulgated, was to endure for only ten years. But this constitution was now altered, and the assent of the people being demanded to a new one, by which Bonaparte was to remain consul for life, and even to possess the power of nominating his successor, suffrages in favour of this measure were obtained to the number of between three and four millions. The event was celebrated with the greatest magnificence in Paris; and addresses of congratulation were presented from the different courts of the continent of Europe, and even from the emperor of Germany.

These transactions could scarcely fail to be noticed in Britain, and to become the subject of animadversion in the public newspapers. In fact the unprincipled ambition of Bonaparte, and the degraded character and state of the French nation, formed topics of frequent discussion in the public journals, and were criticised with unexampled severity. Even the personal character of the first consul was not spared; and it cannot be denied that he was often libelled in the grossest manner. Bonaparte appears to have early become sensitive and irritated on this head. The English, owing to their political freedom, had long boasted of their superiority as a people over their en-

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Geo. III. of slaved neighbours of France; and the first consul, no doubt, dreaded lest the vanity of his subjects should be wounded by continual representations, coming from the free press of England, of the degraded state into which it was alleged they had fallen. A great degree of irritation was thus produced in the French government against England; and the first consul even went so far as not only to prohibit the importation of English newspapers into France, but to demand from our government that the best bulwark of British freedom should be destroyed, by imposing restrictions upon the liberty of the press. He was even weak enough, through the medium of the French official journal, to commence a contest of argument, eloquence, and vituperation, against the writers of English newspapers. But in such a warfare he could not fail to be beaten; because they had nothing else to do but to write; and because the obscurity of their situation as individuals enabled them to inflict deep wounds without fear of reprisals. Newspaper writers also had much to gain by the contest, and certainly could wish for nothing more favourable to their interests, than to be enabled, during a dull, monotonous period of peace, to render their lucubrations interesting, and to amuse their readers by engaging in a paper war with Bonaparte. These circumstances, however, added to the restless ambition of this wonderful person, and his obvious want of discernment as to the true interests of France, or of patience to pursue them, left but little reason to hope that the peace so recently concluded would be of any long duration.

The new parliament assembled on the 16th of November, and Mr Abbot was chosen speaker of the House of Commons. On the 22d, his majesty, in a speech from the throne, after congratulating the country on the abundant harvest, remarked, that the state of the manufactures, commerce, and revenues of the united kingdom was flourishing beyond example; that the loyalty and attachment which were manifested to his person and government afforded the strongest indication of the just sense entertained of the numerous blessings enjoyed under the protection of our happy constitution; that, in his intercourse with foreign powers, he had been actuated by a sincere disposition for the maintenance of peace; that nevertheless he could not lose sight of that established and wise system of policy by which the interests of the other states were connected with our own, or be indifferent to any material change in their relative condition and strength; that his conduct would be invariably regulated by a due consideration of the actual situation of Europe, and a watchful solicitude for the permanent welfare of his people; and that he would not fail to adopt those means of security which were best calculated to preserve to his subjects the blessings of peace. In both houses the usual address was agreed to unanimously and without debate.

About this time Colonel Despard, and six persons of low rank, were executed for high treason. Despard was an Irishman, and of good family. Having long been under close confinement during the late administration, on suspicion of entertaining criminal designs against the government, his imagination, while under seclusion from society, had become inflamed nearly to madness; and after his liberation, in consequence of the *habeas corpus* act being no longer suspended, he had associated with a number of mean persons, whom he had induced to imagine that they were capable of overturning the government and altering the constitution. They accordingly took an oath to this effect, and agreed to attack the king at the meeting of parliament, to seize the Tower and the bank, and to incite a general insurrection. But their wild scheme was discovered, and their criminal engagements being fully proved, they were convicted and executed.

In the meanwhile some difficulties occurred in the execution of the treaty of Amiens. The British ministry had avoided engaging in a quarrel with Bonaparte on account of his continental usurpation, because they found no power willing to join them in resisting him; but his restless ambition induced him to endeavour to lay hold of the island of Malta; and his impatient spirit prevented his conducting the plan in such a manner as might have enabled him to avoid suspicion and insure success. That island was destined by the treaty to be intrusted to the order of St John of Jerusalem. Without waiting till the British had abandoned it, Bonaparte instantly set on foot negotiations with the different countries to which the knights of the order belonged, to procure the abolition of the order, the confiscation of its revenues, and the prohibition of the future enrolment of knights, and their departure for Malta. And having accomplished these objects, he required the British government to deliver up the island to a grand master, appointed, at his instigation, by the pope; or to the king of Naples, who was to receive possession, in the first instance, for behoof of the knights. Strictly speaking, there was thus no longer any order of Malta to defend the island; and as the king of Naples was at all times at the mercy of France, the evacuation of Malta by the British troops would, in the actual posture of affairs, have been equivalent to the transferring it to the latter power. The British ministry had submitted to the late continental acquisitions of France from want of means to oppose them; but they resolved to oppose the seizure of this island, which may be considered as the key of the Mediterranean, because the superiority of the British fleet enabled them successfully to do so. This determination appears to have greatly perplexed the vehement and irritable mind of the first consul. No successful resistance had hitherto been offered to any of his continental enterprises; and as the attempt now made to refuse delivery of the island to the king of Naples, and the nominal grand master of the order of St John, could only be justified by accusing him of having acted fraudulently against the spirit of the treaty, so an acquiescence on his part in the retention of the island, contrary to the express stipulations of the treaty of Amiens, would have been equivalent to a confession of guilt. In this situation he found himself detected in a deceit which he was unwilling to acknowledge; whilst, at the same time, he suffered the additional mortification of having sacrificed his reputation without any profit in return, the irresistible power of the British navy rendering it impossible for him to seize Malta by force. In this dilemma, a conversation occurred between him and the British ambassador Lord Whitworth, which, as the fortunes of Bonaparte have been so extraordinary, it may be worth while to record, in the terms in which it was reported to the British court. In a letter to Lord Hawkesbury, dated the 21st February, Lord Whitworth says:—

"I received a note from M. Talleyrand, minister for foreign affairs, informing me the first consul desired to converse with me, and that I would come to him at the Thuilleries at nine o'clock. He received me in his cabinet, with tolerable cordiality; and after talking on different subjects for a few minutes, he desired me to sit down, as he himself did on the other side of the table, and began. He told me that he felt it necessary, after what had passed between me and M. de Talleyrand, that he should in the most clear and authentic manner make known his sentiments to me, in order to their being communicated to his majesty; and he conceived this would be more effectually done by himself, than through any medium whatever. He said that it was a matter of infinite disappointment to him, that the treaty of Amiens, instead of being followed by conciliation and friendship, the natural effects

Reign of George III. of peace, had been productive only of continual and increasing jealousy and mistrust; and that this mistrust was now avowed in such a manner as must bring the point to an issue. He now enumerated the several provocations which he pretended to have received from England. He placed in the first line our not evacuating Malta and Alexandria, as we were bound to do by treaty. In this he said that no consideration on earth would make him acquiesce, and of the two, he had rather see us in possession of the Fauxbourg St Antoine, than Malta. He then adverted to the abuse thrown out against him in the English public prints; but this, he said, he did not so much regard, as that which appeared in French papers published in London. This he considered as much more mischievous, since it meant to excite this country against him and his government. He complained of the protection given to Georges, and others of his description, who, instead of being sent to Canada, as had been repeatedly promised, were permitted to remain in England, handsomely pensioned, and were constantly committing all sorts of crimes on the coasts of France, as well as in the interior. In confirmation of this, he told me that two men had within these few days been apprehended in Normandy, and were now on their way to Paris, who were hired assassins, and employed by the Bishop of Arras, by Georges, and by Duthiel, as would be fully proved in a court of justice, and made known to the world. He acknowledged that the irritation he felt against England increased daily, because every wind (I make use as much as I can of his own ideas and expressions) which blew from England brought nothing but enmity and hatred against him. He now went back to Egypt, and told me, that if he had felt the smallest inclination to take possession of it by force, he might have done it a month ago, by sending twenty-five thousand men to Aboukir, who would have possessed themselves of the whole country, in defiance of the four thousand British in Alexandria. That instead of that garrison being a means of protecting Egypt, it was only furnishing him with a pretence for invading it. This he would not do, whatever might be his desire to have it as a colony; because he did not think it worth the risk of a war, in which he perhaps might be considered as the aggressor, and by which he should lose more than he could gain, since, sooner or later, Egypt would belong to France, either by the falling to pieces of the Turkish empire, or by some arrangement with the Porte. As a proof of his desire to maintain peace, he wished to know what he had to gain by going to war with England. A descent was the only means of offence he had, and that he was determined to attempt by putting himself at the head of the expedition. But how could it be supposed, that after having gained the height on which he stood, he would risk his life and reputation in such a hazardous attempt, unless forced to it by necessity, when the chances were that he and the greatest part of his expedition would go to the bottom of the sea. He talked much on this subject, but never affected to diminish the danger. He acknowledged that there were a hundred chances to one against him; but still he was determined to attempt it, if war should be the consequence of the present discussion; and such was the disposition of the troops, that army after army would be found for the enterprise. He then expatiated much on the natural force of the two countries. France with an army of four hundred and eighty thousand men (for to this amount it is, he said, to be immediately completed), all ready for the most desperate enterprises; and England with a fleet that made her mistress of the seas, and which he did not think he should be able to equal in less than ten years. Two such countries, by a proper understanding, might govern the world, but by their strifes might

Reign of George III. overturn it. He said, that if he had not felt the enmity of the British government on every occasion since the treaty of Amiens, there would have been nothing that he would not have done to prove his desire to conciliate; participation in indemnities as well as in influence on the Continent, treaties of commerce, in short, any thing that could have given satisfaction, and have testified his friendship. Nothing had, however, been able to conquer the hatred of the British government, and, therefore, it was now come to the point, whether we should have peace or war. To preserve peace, the treaty of Amiens must be fulfilled; the abuse in the public prints, if not totally suppressed, at least kept within bounds, and confined to the English papers; and the protection so openly given to his bitterest enemies (alluding to Georges, and persons of that description) must be withdrawn. If war, it was necessary only to say so, and to refuse to fulfil the treaty."

The result of this conversation, and of some circumstances in the conduct of the French, was, that on the 8th of March, the following message was addressed by the king to the House of Commons. "His majesty thinks it necessary to acquaint the House of Commons, that as very considerable military preparations are carrying on in the ports of France and Holland, he has judged it expedient to adopt additional measures of precaution for the security of his dominions. Though the preparations to which his majesty refers are avowedly directed to colonial service, yet as discussions of great importance are now subsisting between his majesty and the French government, the result of which must at present be uncertain, his majesty is induced to make this communication to his faithful Commons, in the full persuasion, that while they partake of his majesty's earnest and unvarying solicitude for the continuance of peace, he may rely with perfect confidence on their public spirit and liberality, to enable his majesty to adopt such measures as circumstances may appear to require, for supporting the honour of his crown, and the essential interests of his people." On the motion of Mr Addington, the house voted an address, agreeing unanimously to support the crown in the measures proposed. It speedily appeared that the preparations which had been alluded to in the king's message were extremely trifling indeed. Bonaparte had obliged the Spaniards to cede to him the sovereignty of Louisiana; and an armament, with about four thousand troops, was now preparing to leave the ports of Holland to take possession of the territory thus acquired. The government of the United States opposed this measure; and the state of Kentucky sent notice to the president that ten thousand volunteers had enrolled themselves, and were resolved, with or without the aid of the union, to resist the settlement of the French in their neighbourhood. Meanwhile Bonaparte, who probably had no serious intention of effecting such a settlement, sold for a sum of money to the United States of North America the territory of Louisiana; a country inhabited by many independent tribes of savages, and to which, upon the principles of natural justice, neither he, nor the Spaniards, nor the Americans, had any right. But the inhabitants of Europe, and even the Transatlantic race of Europeans, had now for some ages been accustomed to regard all foreign countries as unoccupied property, which they might seize and transfer to each other, without regard to the natural inhabitants, whom they considered as beings of a subordinate race and character. Accordingly this transference of Louisiana excited no surprise in Europe.

Meanwhile, as the king's message to the House of Commons, already mentioned, evinced a determination on the part of the British government to prefer a new war rather than suffer Bonaparte to carry further his ambitious pro-

jects, the mind of that extraordinary person seems to have been wrought up to an extraordinary degree of irritation. In his palace he affected to use all the forms of the ancient French court. At the drawing-room, where he was waited upon by the whole ambassadors of Europe, and by a numerous assemblage of persons of high rank from all countries, he could scarcely observe the ordinary forms of civility to the British ambassador; and Lord Whitworth, in a dispatch dated the 14th of March, which was afterwards communicated to parliament, gave the following account of the behaviour of the first consul on one occasion at the court of the Thuilleries:—

“He accosted me evidently under very considerable agitation. He began by asking me if I had any news from England? I told him I had received a letter from Lord Hawkesbury two days ago. He immediately said, ‘And so you are determined to go to war.’ ‘No,’ I replied; ‘we are too sensible of the advantages of peace. We have had war for fifteen years already.’ As he seemed to wait for an answer, I observed only, ‘We have had too much of it.’ ‘But you wish to carry it on for fifteen years longer, and you force me to it.’ I told him that it was very far from his majesty’s intentions. He then proceeded to Count Marcof and the Chevalier Azara, who were standing together at a little distance from me, and said to them, ‘The English wish for war, but if they are the first to draw the sword, I shall be the last to sheath it. They have no regard to treaties, henceforth they should cover them with black crape.’ In a few minutes he came back to me, and resumed the conversation by something personally civil to me. He began again, ‘Why these armaments? Against what are these measures of precaution? I have not a single ship of the line in the ports of France; but if you wish to arm, I will arm also. If you wish to fight, I will fight also. You may perhaps destroy, but you will never intimidate France.’ ‘We wish neither the one nor the other. It is our desire to live in good understanding with her.’ ‘You must regard treaties then. Confusion to those who have no regard to treaties: (*malheur à ceux qui ne respectent pas les traités!*) they will be responsible for it to all Europe.’ He was too much agitated to make it advisable for me to prolong the conversation. I therefore made no answer; and he retired to his apartment repeating the last phrase. It is to be remarked, that all this passed loud enough to be heard by two hundred people who were present; and I am persuaded that there was not a single person who did not feel the impropriety of his conduct, and the total want of dignity as well as of decency on the occasion.” The negotiations in the mean time proceeded; and Bonaparte still insisted upon the literal fulfilment of the treaty of Amiens. He appears to have flattered himself that the British ministry would not venture to renew the war on account of Malta. Their pacific dispositions were well known; they had suffered him to make great encroachments upon the Continent without engaging in hostilities; they were understood to consist of men who were not the leaders of any party, but had only held a subordinate rank as supporters of Mr Pitt’s administration; and they had been loudly accused in Britain by the ex-ministers, and by many of the old opposition, of want of talents and want of spirit, on account of the apparent tameness with which they had recently acted. It seems likely, therefore, that Bonaparte presumed that they would ultimately give way to his demands. But the good temper and forbearance of administration had the effect of rousing the spirit of the British nation, and of inducing, in a large proportion of the people, a wish to engage in a war against a man whom they now detested as an odious usurper. Thus encouraged, administration rose in their demands; and on the 12th of May Lord Whit-

worth presented the ultimatum of the British government, which was in substance that the French government should engage to make no opposition to the cession of the island of Lampedosa to his majesty by the king of the Two Sicilies; that, in consequence of the present state of the island of Lampedosa, his majesty should remain in possession of the island of Malta until such arrangements should be made by him as might enable him to occupy Lampedosa as a naval station, after which period the island should be given up to the inhabitants, and acknowledged as an independent state; that the territories of the Batavian republic should be evacuated by the French forces within one month after the conclusion of a convention founded on the principles of this project; that the king of Etruria and the Italian and Ligurian republics should be acknowledged by his majesty; that Switzerland should be evacuated by the French forces; that a suitable territorial provision should be assigned to the king of Sardinia in Italy; and, in a secret article, that his majesty should not be required by the French government to evacuate the island of Malta until after the expiration of ten years. The proposed stipulations relative to the king of Etruria, the Italian and Ligurian republics, and the king of Sardinia, were merely inserted as make-weights; and accordingly, in an additional article, it was provided that they might be omitted, but that, if inserted at all, they must be inserted together.

This ultimatum having been rejected, war was announced on the 16th of May, by a message from the king to the two houses of parliament; and on the 21st of May a declaration, justifying this measure, appeared in the London Gazette. As the statements contained in this document exhibit a detail of the public acts alleged to have occasioned the renewal of the war, it may be proper to insert a few of its leading paragraphs.

“As soon as the treaty of Amiens was concluded, his majesty’s courts were open to the people of France for every purpose of legal redress. All sequestrations were taken off their property; all prohibitions on their trade, which had been imposed during the war, were removed; and they were placed on the same footing, with regard to commerce and intercourse, as the inhabitants of any other state in amity with his majesty with which there existed no treaty of commerce.

“To a system of conduct thus open, liberal, and friendly, the proceedings of the French government afforded the most striking contrast. The prohibitions which had been placed on the commerce of his majesty’s subjects during the war have been enforced with increased strictness and severity. Violence has been offered in several instances to their vessels and their property; and in no case has justice been afforded to those who may have been aggrieved in consequence of such acts; nor has any satisfactory answer been given to the repeated representations made by his majesty’s ministers or ambassadors at Paris. Under such circumstances, when his majesty’s subjects were not suffered to enjoy the common advantages of peace within the territories of the French republic and the countries dependent upon it, the French government had recourse to the extraordinary measure of sending over to this country a number of persons for the professed purpose of residing in the most considerable seaport towns of Great Britain and Ireland in the character of *commercial agents or consuls*. These persons could have no pretensions to be acknowledged in that character, as the right of being so acknowledged, as well as the privileges attached to such a situation, could only be derived from a commercial treaty, and as no treaty of that description was in existence between his majesty and the French republic.

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"There was consequently too much reason to suppose that the real object of their mission was by no means of a commercial nature; and this suspicion was confirmed, not only by the circumstance that some of them were military men, but by the actual discovery, that several of them were furnished with instructions to obtain the soundings of the harbours, and to procure military surveys of the places where it was intended they should reside. His majesty felt it to be his duty to prevent their departure to their respective places of destination, and represented to the French government the necessity of withdrawing them; and it cannot be denied, that the circumstances under which they were sent, and the instructions which were given to them, ought to be considered as decisive indications of the dispositions and intentions of the government by whom they were employed.

"If the French government had really appeared to be actuated by a due attention to such a system, if their dispositions had proved to be essentially pacific, allowance would have been made for the situation in which a new government must be placed, after so dreadful and extensive a convulsion as had been produced by the French revolution. But his majesty has unfortunately had too much reason to observe and to lament, that the system of violence, aggression, and aggrandisement, which characterised the proceedings of the different governments of France during the war, has been continued with as little disguise since its termination. They have continued to keep a French army in Holland, against the will and in defiance of the remonstrances of the Batavian government, and in repugnance to the letter of their solemn treaties. They have, in a period of peace, invaded the territory and violated the independence of the Swiss nation, in defiance of the treaty of Luneville, which had stipulated the independence of their territory, and the right of the inhabitants to choose their own form of government. They have annexed to the dominions of France, Piedmont, Parma, and Placentia, and the island of Elba, without allotting any provision to the king of Sardinia, whom they have despoiled of the most valuable part of his territory, though they were bound by a solemn engagement to the emperor of Russia to attend to his interests, and to provide for his establishment. It may indeed with truth be asserted, that the period which has elapsed since the conclusion of the definitive treaty has been marked with one continued series of aggression, violence, and insult, on the part of the French government."

With regard to Malta, the declaration proceeded to state, "that when the French government demanded its evacuation, several articles of the treaty of Amiens respecting it remained unexecuted. The tenth article had stipulated that the independence of the island should be placed under the guarantee and protection of Great Britain, France, Austria, Russia, Spain, and Prussia. The emperor of Germany had acceded to the guarantee, but only on condition of a like accession on the part of the other powers specified in the article. The emperor of Russia had refused his accession, except on the condition that the Maltese langue should be abrogated; and the King of Prussia had given no answer whatever to the application which had been made to him to accede to the arrangement. That the fundamental principle upon which depended the execution of the other parts of the article had been defeated by the changes which had taken place in the constitution of the order since the conclusion of the treaty of peace. It was to the order of St John of Jerusalem that his majesty was by the first stipulation of the tenth article bound to restore the island of Malta. The order is defined to consist of those langues which were in existence at the time of the conclusion of the treaty.

The three French langues having been abolished, and a Maltese langue added to the institution, the order consisted therefore at that time of the following langues, viz. Arragon, Castile, Germany, Bavaria, and Russia. Since the conclusion of the definitive treaty, the langues of Arragon and Castile have been separated from the order by Spain, and part of the Italian langue had been abolished by the annexation of Piedmont and Parma to France. There is strong reason to believe that it has been in contemplation to sequester the property of the Bavarian langue, and the intention has been avowed of keeping the Russian langue within the dominions of the emperor."

The French were also accused of having instigated or effected the whole of these changes, and of thus having rendered it impossible to fulfil that part of the treaty; and it was further remarked, that from a report published by an accredited agent of the French government, Colonel Sebastiani, it appeared that France entertained views hostile to the Turkish empire, the integrity of which had been expressly stipulated, and that this rendered the retention of Malta more necessary. The behaviour of the first consul to Lord Whitworth at his audience was also noticed, together with some other offensive occurrences; and it was observed that "his majesty might add to this list of indignities, the requisition which the French government have repeatedly urged, that the laws and constitution of this country should be changed, relative to the liberty of the press. His majesty might likewise add the calls which the French government have on several occasions made to violate the laws of hospitality, with respect to persons who had found an asylum within his dominions, and against whose conduct no charge whatever has at any time been substantiated. It is impossible to reflect on these different proceedings, and the course which the French government have thought proper to adopt respecting them, without the thorough conviction that they are not the effect of accident, but that they form a part of a system which has been adopted for the purpose of degrading, vilifying, and insulting his majesty and his government."

Administration were now placed in a very singular situation. Mr Fox, who opposed the war, proposed that an attempt should be made to prevail with the emperor of Russia to mediate a peace, upon the supposition that, if his mediation was rejected by France, we might be able to secure an alliance with him; and to this proposal administration acceded; but although Mr Fox opposed the war, almost the whole of the other members of the old opposition, including Mr Sheridan and Mr Tierney, strongly approved of it, while Mr Pitt and the rest of the ex-ministry joined in the opinion. As Bonaparte had threatened to attempt an invasion, the parties out of power laid hold of this circumstance to excite alarm, and industriously represented the actual ministers as men of moderate capacity, unfit to be intrusted with the defence of the empire in a perilous crisis. Mr Pitt and his colleagues, in their speeches in parliament, represented the nation as in danger of being instantly invaded by an innumerable host of experienced troops, who could not be expected to delay more than a few days the attempt to land upon our shores; the members of the old opposition held precisely the same language; and the views of both probably were in some degree to terrify the country to call for their services, as men of greater energy than the present rulers. The militia, both ordinary and extraordinary, were called out; a new body of troops was ordered to be raised by ballot, under the appellation of an army of reserve; and corps of volunteers were formed throughout the whole island. An act of parliament was also passed for calling out, in case of actual invasion, the whole male population of the kingdom,

of III. in classes according to their age or their situation in life; and to meet the expense of these different armaments, and of the augmentation of the navy, the income tax was restored with certain modifications.

The administration thus found their adversaries, unlike any former opposition, striving with emulation to do their work for them, and to strengthen government by new armaments of every kind. The consequence was, that during the ensuing autumn, ministers seemed to become perplexed by the multiplicity of business in their hands, and to entertain doubts about the propriety of some of the measures in which they had embarked. The plan of raising such numerous bodies of troops by ballot, while substitution was at the same time permitted to those upon whom the ballot fell, became a most unequal mode of raising an army for the defence of the state, as it fell upon persons not according to their means, but according to their age. But it was attended with one good effect, that as the bodies of volunteers raised by permission of government enjoyed an exemption from certain ballots, this operated, along with the spirit of the country, as a sufficient premium to induce great multitudes of persons to enrol themselves for the purpose of acquiring the military exercise. Ministers at times hesitated to receive the numerous bodies of volunteers who offered themselves; but as they afterwards departed from this reluctance, nearly four hundred thousand men were trained to the use of arms, exclusive of the regular army, the militia, and the army of reserve.

In the meanwhile the ports of France were closely blockaded, and the foreign possessions of the French seized; while the only step of retaliation in their power to exert consisted in seizing the electorate of Hanover, which they plundered unmercifully. Bonaparte offered to give up Hanover as the price of Malta; but his offer was refused.

The most inconvenient circumstance to Great Britain, arising out of those political transactions, consisted in the great embarrassment occasioned to persons engaged in commerce, which proved the cause of numerous bankruptcies. Towards the close of the former war trade had found out for itself regular channels; and, in particular, the port of Hamburg had become the great store-house of British merchandise, from which, as a neutral state, it was distributed amongst the countries engaged in the war. The conclusion of a treaty of peace produced the daily expectation of a renewal of the intercourse with France, and therefore put a stop to the circuitous trade by Hamburg. But as no place was substituted instead of the latter, a suspension of operations in some manufactures occurred; and when these difficulties were coming to a close, the renewal of the war produced a new uncertainty as to the channels in which the European trade would hereafter flow. The difficulty was increased in consequence of the invasion of Hanover by the French, and their excluding the British from the navigation of the Elbe, while the latter in their turn blockaded the river with ships of war, and thus excluded all the world.

Parliament assembled on the 22d of November. In the speech from the throne his majesty said,—“ Since I last met you in parliament, it has been my chief object to carry into effect those measures which your wisdom had adopted for the defence of the united kingdom, and for the vigorous prosecution of the war. In these preparations I have been seconded by the voluntary exertions of all ranks of my people, in a manner that has, if possible, strengthened their claims to my confidence and affection. They have proved that the menaces of the enemy have only served to rouse their native and hereditary spirit; and that all other considerations are lost in a general disposition to

make those efforts and sacrifices which the honour and the safety of the kingdom demand at this important and critical conjuncture. Though my attention has principally been directed to the great object of internal security, no opportunity has been lost of making an impression on the foreign possessions of the enemy. The islands of St Lucie, Tobago, St Pierre, and Miquelon, and the settlements of Demerara and Essequibo, have surrendered to the British arms. In the conduct of the operations by which these valuable acquisitions have been made, the utmost promptitude and zeal have been displayed by the officers employed in those services, and by my forces acting under their command by sea and land. In Ireland, the leaders and several inferior agents in the late traitorous conspiracy have been brought to justice, and the public tranquillity has experienced no further interruption. I indulge the hope that such of my deluded subjects as have swerved from their allegiance are now convinced of their error; and that having compared the advantages they derived from the protection of a free constitution, with the condition of those countries which are under the dominion of the French government, they will cordially and zealously concur in resisting any attempt that may be made against the security and independence of my united kingdom.”

The usual address to the throne was unanimously carried, though Mr Fox complained that nothing had been said respecting the state of our negotiations with Russia. The debates in parliament during the present session were by no means interesting. In the course of the winter, the French government continued to repeat with much confidence their threats of invasion, and the people of Great Britain remained in daily expectation that a landing would be attempted. But nothing of any importance took place. Bonaparte travelled repeatedly from Paris to the sea-coast, and back again to Paris. It was announced that a body of guides had been formed to conduct the invading army after it had landed in England; and the generals and admirals by whom the expedition was to be conducted were said to have gone to their respective posts. Nothing however occurred, excepting the sailing from one French port to another, under the cover of land-batteries, of small parties of flat-bottomed boats, which, at times, evaded the vigilance of the British cruisers, though they were frequently captured, driven ashore, or sunk.

CHAP. XVIII.

REIGN OF GEORGE III.—RESUMPTION OF HOSTILITIES.— WAR WITH FRANCE AND HER ALLIES.

Parliamentary Proceedings.—Change of Ministry, and return of Mr Pitt to power.—Military Events.—Occupation of Hanover.—Boulogne Armament.—Internal Defence.—Volunteer System.—Naval Operations.—Colonial Conquests.—Spain declares War against Britain.—Battle of Trafalgar, and Death of Lord Nelson.—Continental Affairs in 1805.—Surrender of General Mack and his Army at Ulm.—Austrians and Russians defeated at Austerlitz.—Parliamentary Proceedings.—Session of 1805.—Charges against Lord Melville.—Illness and Death of Mr Pitt, 23d January 1806.—New Ministry, called “ All the Talents.”—Act for a Limited Term of Military Service.—Budget.—Trial and Acquittal of Lord Melville.—New Parliament.—Lord Henry Petty’s Plan of Finance.—Abolition of the Slave-Trade.—Catholic Relief Bill.—Fall of the Grenville or Fox Administration.—Observations on the Ministry of 1806.—The Ministry of 1807, or Perceval Administration.—Events of the War.—Naval Actions in 1806.—Negotiations at Paris.—Failure of these.—Prussia.—War between that Power and France.—Battle of Jena, and subsequent Military Operations in Poland.—Battles of Eylau and Friedland.—Treaty of Tilsit, 1st July 1807.—Expedition to Copenhagen.—Buenos Ayres.—Whitlock’s Di-

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sastrous Expedition.—Battle of Maida.—Threatened Attack on Constantinople.—Sicily.—Sweden.—Portugal and Spain.—Battle of Vimiera.—Convention of Cintra.—Sir John Moore's Campaign.—His Advance and Retreat.—Battle of Corunna.—Session of 1808.—Local Militia.—Orders in Council.—Session of 1809.—Charges against the Duke of York.—Changes in the Cabinet.—Campaign of 1809.—Battle of Talavera.—Attack on the French Fleet in Basque Roads.—Movements of Austria.—Expedition to the Scheldt.—Session of 1810.—Walcheren Expedition.—Committal of Sir Francis Burdett to the Tower.—Scottish Clergy and Judicature Acts.—Campaign of 1810 in Portugal and Spain.—Battle of Busaco.—Subsequent Operations.—Advance of Massena.—Lines of Torres Vedras.—Retreat of the French under Massena.—Battle of Barrosa.

The parliamentary proceedings in the summer session of 1803 were remarkable, as indicating the existence of three or four distinct parties, amidst an almost general concurrence in support of the war. These parties were, first, that of the ministry and their usual followers; secondly, that of the Grenvilles and Mr Windham, who had all along blamed the peace of Amiens, and predicted that it would prove a mere truce; thirdly, that of Mr Pitt and Lord Melville, who, after approving that peace, had, on the continued aggressions of Bonaparte, become ardent supporters of war; and, fourthly, that of Mr Fox, with a part of the old opposition, who were of opinion that the war might have been avoided. But the last were so far from being numerous, that a motion, made on the 23d of May, to express the concurrence of parliament in the war, was opposed by a minority of only ten in the Peers and sixty-seven in the Commons. A subsequent measure, in the same spirit, namely, an act for arming a large part of the population, was carried in July by a great majority; and similar ardour was evinced in submitting anew to war taxes, particularly to a five per cent. income-tax. After the adoption of several other measures of a like description, and a most interesting session of nine months, parliament was prorogued on 12th August.

The next session opened on the 22d of November, and discovered the same alacrity for the prosecution of the war, mixed, however, with a growing opposition to ministers. Mr Pitt had, from the beginning of the war, foreborne to commend them, and, since the failure of a negotiation to bring him into office, had assumed a language occasionally hostile. He continued to support their propositions for the public defence, and frequently improved them in their progress through parliament; but he disclaimed all personal connection with ministers, and at last treated them as incapable of originating any measure of vigour or utility. This disposition could scarcely fail to be turned to account by those busy intermediaries, who find means to combine the efforts even of opposite parties for the purpose of getting into power. On the 15th of March Mr Pitt, aware of the side on which the public was most alive to alarm, brought forward a motion for an inquiry into the management of the navy. On this occasion, severe as was his language in regard to Lord St Vincent, then at the head of the admiralty, he received the support of the opposition, and had on his side a hundred and thirty votes against two hundred and one. From this time forward the strength of ministers was visibly shaken. On the 23d of April Mr Fox brought forward an eagerly-expected motion on the defence of the country, in which Mr Pitt joined, with great animosity against the ministers. On a division, government had a majority of fifty-two, which, in a second debate, on the 25th of April, was reduced to thirty-seven. Soon after this, ministers resigned, and Mr Pitt, called to the royal presence, was desired to form an administration, exclusive, however, of Mr Fox. This peremptory order, and Mr Pitt's too ready acquiescence in it, proved the source of the greatest difficulties.

The Grenvilles had recently so connected themselves with Mr Fox and his friends, that a separation would have been altogether dishonourable; and their united strength, joined to the occasional support of Mr Addington's adherents, was the cause, during the remainder of the session, of very strong divisions against the new ministers, particularly in the Commons. Their chief measure, entitled the Additional Force Bill, was carried by only two hundred and sixty-five to two hundred and twenty-three. The session soon afterwards closed, but not without passing a corn bill, evidently intended to dispose the landed interest to submit to the new taxes, and prohibiting the importation of foreign wheat whenever our own should be at or below sixty-three shillings the quarter.

On the continent of Europe, the only great operation was the invasion, or rather occupation, of Hanover, to which allusion has already been made. War having been declared by us on the 18th May, the French troops advanced from Holland, and entered the electoral capital by the 5th of June. To attempt resistance would have been folly; but in a season when soldiers were so much wanted in England, and so great an expense was incurred in training them, it was matter of regret that the Hanoverian troops, in number about fifteen thousand, should not have been marched down to the coast, and embarked in a body, instead of being disbanded and obliged to pledge themselves not to serve against France until exchanged.

On the side of France the aspect of war was displayed in a great encampment at Boulogne, and in the dispatch, from all the ports along the coast, of flotillas of boats to join the armament preparing in that central rendezvous. These petty convoys had instructions to tempt our cruisers to attack them, and to draw them, at fit occasions, under the fire of land-batteries; and they were sometimes successful in doing so. The main object of Bonaparte was to excite alarm; a course which, however politic toward some countries, was certainly ill judged in regard to one where the executive power, in its inability to coerce, often seeks support in the apprehensions of the public. The general impression of dread facilitated the measures of defence, and led to the volunteer system, which was carried to an unparalleled extent. Never did a country exhibit so many of the middle and higher classes under arms as England and Scotland in 1803; and never did individuals in these stations make more personal sacrifices for the object of national defence. The result was effectual to as great a degree as the situation of the individuals permitted. The volunteers made as near an approach to regularity of discipline as was practicable in the case of men full of ardour, and submitting for a season to the restraint of military service, but necessarily devoid of experience in the field. The error lay in carrying volunteering too far; for the system ought never to have been allowed to extend to a length that absorbed no inconsiderable part of the time and money of men whose lives were too valuable to be indiscriminately exposed, and whose proper aid to the public cause was the tribute of their industry. The volunteer system was of real use only in as far as it promoted cordiality in the common cause, and, by assuring the maintenance of tranquillity at home, enabled government to dispose of the regulars in the field. The plan of collecting flotillas of boats, from east to west, in the central depôt of Boulogne, was continued by Bonaparte, during two years, from the middle of 1803 to that of 1805. A great parade was made of the number of troops ready to embark, and of the determination to encounter all hazards; but there was no efficient support by ships of war, until the spring of 1805, when the sailing of squadrons for the West Indies took place, first from Rochefort, and afterwards from Cadiz. These, it was cal-

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culated, might excite alarm for our colonies, and induce government to send thither a portion of the men of war hitherto reserved for home defence; after which the hazardous attempt of a descent might have entered seriously into the calculations of the French ruler. That it did so at this time was positively affirmed by him in conversations held with English gentlemen in the island of Elba, and afterwards in that of St Helena; but these conversations were marked by sundry misrepresentations; for he attributed the non-execution of the attempt entirely to the threatened coalition on the Continent, and would not acknowledge that it was impracticable;—a matter of nautical calculation, when our government kept our channel fleet at home, instead of sending it, as he had anticipated, to the West Indies.

Such was the aspect of the war during two years, in which our naval superiority led to an easy conquest of several of the Dutch and French West India colonies. St Lucie surrendered on the 22d of June 1803; Tobago, on the 1st of July; Demerara and Berbice, on the 23d of September; and Cape Town, the last spot in the French half of St Domingo, occupied by French troops, capitulated to the Blacks on the 30th of November. Next year was taken the small island of Gorce, on the coast of Africa, and soon after the important Dutch colony of Surinam. On the other hand, we were not successful in our attempts on the French flotillas on their own shores. One of these was directed against a convoy on the coast between Flushing and Ostend; another, on a larger scale, and very different plan, was pointed at the Boulogne armament, which it was proposed to blow up by *catamarans*; an attempt no less unsuited to open and generous warfare than the torpedoes of the Americans. Fortune was more favourable to us in encounters with the enemy in the open ocean, where, in the early part of 1804, a striking proof of the effects of intrepidity was given in the case of a fleet of merchantmen from China, which beat off, or at least deterred from action, a French squadron under Admiral Linois, consisting of a ship of eighty guns and three frigates.

The war hitherto had been with France and Holland only; but a new power was now to be added to the list of our antagonists. Spain had been allowed by Bonaparte to avoid participating in the contest, on condition of paying a large annual contribution; a condition so contrary to real neutrality, that for some time past our government had kept a vigilant eye on the expected arrival of her treasure ships from America. A small squadron of four frigates, sent out to intercept these valuable supplies, met, on the 5th of October 1804, a Spanish squadron of a similar number proceeding towards Cadiz; and the Spanish commodore refusing to surrender, an engagement ensued, attended with the capture of three of the Spanish frigates, and the explosion of the fourth, accompanied with the loss of many lives. This decisive act, approved at home by the advocates of vigorous measures, was productive of the worst impressions in regard to our national honour both in Spain and her colonies, and led soon afterwards to a declaration of war by that power.

Bonaparte was now provided with additional means of threatening our distant possessions. A squadron of five sail of the line escaping from Rochefort, landed a body of nearly four thousand men on the island of Dominica, and burned the chief town; the island of St Kitt's escaped with paying a contribution and the loss of some merchantmen. But this was only a prelude to the arrival of a much more formidable fleet, which, to the number of eighteen sail of the line, French and Spanish, reached the West Indies in the end of May, and spread alarm throughout the islands; an alarm not dispelled till the arrival of a force inferior by nearly one third, but commanded by Lord

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Nelson. The hostile fleet soon after set out on its homeward voyage. Intelligence to that effect was opportunely received by Lord Barham, then at the head of the admiralty; and a fleet, detached to cruise on their supposed track, had the good fortune to fall in with them on 22d July. An action took place; two sail of the line, Spanish ships, were captured; night terminated the conflict; and though it might have been renewed on the succeeding days, an unfortunate indecision on the part of our admiral, Sir Robert Calder, allowed the enemy to escape. They soon afterwards repaired to Ferrol, whence they sailed with augmented force, and reached Cadiz.

To watch them there, or to engage them on their coming out, was now an object of the highest moment; and it was to Lord Nelson that this important trust was committed. Joining our fleet off Cadiz on the 20th September, he avoided keeping in sight, and even dispensed with the aid of six sail of the line, which he sent to a distance along the coast; judging that the enemy, when apprized of their absence, would be induced to come out. Accordingly, the combined fleet left Cadiz on the 19th of October, to the number of thirty-three sail of the line, eighteen French and fifteen Spanish, commanded by Admiral Villeneuve, and early on the 21st came in sight of the British fleet, consisting of twenty-seven sail of the line, off Cape Trafalgar, about half way between Cadiz and Gibraltar. The enemy, convinced that their former defeats at sea had been owing to the want of concentration and mutual support, now formed a double line, every alternate ship being about a cable's length to windward of her second ahead and astern, so that any of our ships, attempting to penetrate, would be exposed to the fire of two or of three antagonists. Nelson, while yet distant, perceived their arrangement, and understood its object. It was new, but he was satisfied that no concentration in the open sea could prevent our vessels from coming to close action with their opponents, in which case the result could not long be doubtful. He consequently made no alteration in his previous plan, which was to make the order of sailing the order of battle, the fleet being in two lines, with an advanced squadron of eight of the fastest sailing two-deckers; but directed the fleet to advance to the attack in two divisions, one of which, under Admiral Collingwood, intersected that part of the enemy's line which gave it nearly an equal number of ships to encounter; whilst Nelson, with the other division, acted on a similar plan. Such was the only general manœuvre in this great action. By our superior seamanship, and our ships keeping near each other, we had in some cases a local superiority; but the general character of the fight was a conflict of ship to ship; and its decision in our favour was owing to that skill in working the guns, to that dexterity in an occasional change of position, and that confidence of success which characterizes a naval force in a high state of discipline. Our loss, amounting to sixteen hundred men, was in part caused by the riflemen in the enemy's rigging; an ungenerous mode of warfare, which may deprive an opposing force of officers, but can have little effect on the general issue of a conflict. The fighting began at noon, became general in less than half an hour, and lasted from two to three hours; in the case of a few ships it continued longer, but all firing was over by half-past four o'clock. The victory was complete, but purchased by the death of Nelson, who was mortally wounded by a musket ball fired from the mizen-top of the Redoubtable, by one of the enemy's riflemen, and expired just as the action closed. Nineteen sail of the line struck; but unfortunately gales of wind, after the action, wrecked part of our prizes, and necessitated the destruction of others. Four sail, however, were preserved; and four more, which had escaped, under Rear-admiral Dumanoir, were

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met on their northward course, on the 2d of November, and captured off Cape Ortegal, by a squadron under Sir Richard Strachan.

But upon the continent of Europe the course of public events was very different. The year had been ushered in by a letter of Bonaparte to our sovereign, containing pacific expressions couched in general terms. An answer was given, not by the king, but, according to diplomatic usage, by our minister for foreign affairs, to the French minister in the same station, expressing a similar wish for peace, but adding, that it was incumbent on us to consult our allies, particularly the emperor of Russia. The French ridiculed the assertion of our being on confidential terms with that court; but Russia had in fact begun to listen to the proposal of forming a coalition against France on an extensive scale. The basis of this compact was a treaty signed at St Petersburg in April. Russia, Austria, Sweden, Naples, all acceded to it, and hopes were entertained of the co-operation of Prussia. Bonaparte, apprized of this, affected to be absorbed in arrangements for immediately invading England, but secretly prepared to march his troops from Boulogne to the Rhine. After throwing on the Austrians the odium of aggression, by allowing them to attack Bavaria before he acted, he proceeded to execute a plan singularly adapted to the overweening confidence of his opponent, General Mack, who by this time had traversed Bavaria and advanced to Ulm. By executing forced marches, and violating part of the neutral territory of Prussia, Bonaparte reached first the flank, and soon afterwards the rear, of the enemy, who clung with blind pertinacity to the position of Ulm. The result to the Austrians was a series of checks in the field, and eventually the surrender, by capitulation, of more than thirty thousand men. The road to Vienna was thus opened to Bonaparte. He marched thither, crossed the Danube, proceeded northward, and at Austerlitz, on the 2d of December, displayed his military combinations in all their lustre, gaining over the Austrians and Russians, with forces not superior, a victory which compelled Austria to immediate peace; and thus by one blow broke up the coalition.

Before the opening of the session of 1805, an overture, suggested, it is said, by the sovereign personally, was made to Mr Addington; and, after some discussion, it was accepted, Mr Addington receiving the presidency of the council for himself, and corresponding situations for his friends. With this support ministers met parliament; and in one of the first great questions the approval of the war with Spain obtained the concurrence of three hundred and thirteen votes against a hundred and six. In subsequent divisions, the majorities, though less decisive, were considerable, until the 6th of April, when Mr Whitbread brought forward a most interesting discussion on the tenth report of the commissioners of naval inquiry, which implicated Lord Melville. This question, debated in a full house, produced a division of two hundred and sixteen against two hundred and sixteen, when, after a most anxious pause, the resolutions moved by Mr Whitbread were carried by the casting vote of the speaker. This led immediately to the resignation by Lord Melville of his office of first lord of the admiralty, and was followed by the erasure of his name from the list of privy counsellors. Some time after, his lordship was, at his own desire, heard before the House of Commons; and whilst he acknowledged that temporary irregularities in the appropriation of the public money had taken place when he was treasurer of the navy, he disclaimed, on his honour, the alleged participation in the profits of Mr Trotter, who had acted as his paymaster. But the expectations of the public were raised, and a prosecution, in some shape or other, was indispensable. A motion for an impeachment before the Lords, made by Mr

Whitbread, was lost by two hundred and seventy-two to a hundred and ninety-five; but the Addington party joining opposition in a motion for a criminal prosecution, the latter was carried by two hundred and thirty-eight against two hundred and twenty-nine. Lord Melville and his friends, dreading this more than an impeachment, found means, by a sudden division of the house, to rescind the vote to that effect, and to decide on an impeachment before the Lords. And parliament was prorogued after giving ministers a vote of credit to the extent of three millions, to be applied, if necessary, in subsidies to continental powers.

The proceedings against Lord Melville made a deep impression on Mr Pitt, and deprived him of his only efficient coadjutor, at a time when, from the magnitude of his public cares, he was more than ever in want of support. The consequent fatigue and anxiety made severe inroads on a constitution naturally not strong. His indisposition became apparent in the early part of winter, and, on the meeting of parliament, it was understood to have reached a dangerous height. His death took place on the 23d January 1806. A motion, brought forward a few days after, to grant a public funeral, and to erect a monument to the late excellent minister, excited much discussion. Mr Fox paid a high tribute to the financial merits of his great rival, which, in fact, were extremely questionable; but he could not join in ascribing the epithet of "excellent" to measures which he had so often opposed. Mr Windham also opposed the vote; and the Grenvilles chose to be absent. Still the motion was carried by two hundred and fifty-eight against a hundred and sixty-nine. To a subsequent proposition for a grant of £40,000 for the payment of Mr Pitt's debts, no opposition was made.

The public attention was now fixed on the approaching change of ministry. The king, in concurrence, it is said, with the death-bed recommendation of Mr Pitt, sent for Lord Grenville, desired him to form a ministry, and made no opposition to the admission of Mr Fox into the cabinet; but he is said to have expressed a desire that the Duke of York should retain the office of commander-in-chief. The new administration was formed on a broad basis, comprising the friends of Lord Grenville, those of Mr Fox, and those of Lord Sidmouth. But hardly had they entered upon office when circumstances occurred which placed in a striking light the different conduct of men when in and out of power. Lord Grenville thought fit to hold the incompatible offices of first lord and auditor of the treasury, and the chief justice was admitted to a seat in the cabinet, whilst Mr Fox consented to come forward as the vindicator of both.

The defence of the country against the great military power of France being still the most anxious consideration, the first measure of a comprehensive nature was brought forward by Mr Windham, whose station in the new ministry was the war department. It proposed the repeal of Mr Pitt's additional force bill, and a plan for improving the regular army, by substituting a limited for an unlimited term of service, and by granting a small increase of pay after the expiration of the prescribed term. These propositions, brought forward in the end of April and beginning of May, were warmly opposed: they passed, however, by a great majority in both houses, and would, doubtless, have conduced materially to the improvement of our army had they received a fair trial; but the succeeding ministries sought, during the whole war, to procure enlistments for life. In France, since 1817, the rule is, to be scrupulous about the character of recruits, to give little or no bounty, but to limit the period of service, and to increase the pay after the expiration of the specified term. The same principle, differently modified, prevails both in Prussia and in Austria.

Reign of George III. Of the budget, the most remarkable feature was an increase of the property-tax from six and a half to ten per cent., the odium of which ministers sought to lessen by the appointment of a board of auditors to examine the long-standing arrears in public accounts. In regard to trade, the principles of this ministry, though little understood, and even disliked by the great majority of merchants, were entitled to much attention. They attempted to introduce into our practical policy some of the doctrines of Dr Smith, doctrines which Mr Pitt had studied in his early years, but to which circumstances had not allowed him to give an extensive application. The letter of our navigation laws forbade all intercourse between our colonies and other countries; but our West India colonies were, in time of war, so dependent on the United States for provisions, that it had been customary with the island governors to take on themselves the responsibility of infringing these acts, and to obtain regularly a bill of indemnity from parliament. Mr Fox now brought in a bill termed the American Intercourse Act, the purport of which was, to authorize the governors of our colonies to do, during the remainder of the war, that which they had hitherto done from year to year, and to dispense with any application for indemnity. This bill, moderate and politic as it in fact was, met with keen opposition in parliament, and with still keener out of doors from the shipping and commercial interests. It passed into a law; but it was denounced as a glaring infraction of our navigation code, and contributed, more than any other measure, to shake the popularity of ministers.

The trial of Lord Melville before the House of Peers began on the 29th of April 1806. The charges against him, little understood by the public at large, related to an infraction of his official duty, not as a member of the cabinet, but in his early and inferior station of treasurer of the navy. These charges may be comprised under the following heads: That he had allowed Mr Trotter, his paymaster, to take the temporary use and profit of sums of money lodged in the bank for the naval expenditure; that he had himself participated in such profits; and, finally, that he had applied certain sums of the public money to his private use. All participation in the speculations or profit of his paymaster his lordship positively denied, but he acknowledged a temporary appropriation of the sum of £10,000 in a way which private honour and public duty forbade him to reveal. The trial closed on the 12th of June. The articles of impeachment had been extended to the number of ten, and on all of them there was a majority of peers for his acquittal; but whilst in regard to the charge of conniving at stock speculations by Trotter, or converting the public money to his private use, the majorities were triumphant, the case was otherwise in regard to his lordship's permitting an unauthorized appropriation of the public money by Trotter, and receiving from him temporary loans, the records of which were afterwards destroyed.

Though the present parliament had completed only four sessions, ministers determined on a dissolution, doubtless from a wish to have the benefit of the government influence in the new elections. They knew their weakness at court, and flattered themselves that a decided ascendancy in parliament would enable them to press, with greater confidence, measures for which they could not boast the cordial concurrence of their royal master. For the time of the new election they chose the moment of national excitement caused by the recal of our ambassador from the French capital. The first debate in the new House of Commons related to the abortive negotiation for peace; and although the publication of the official papers excited some surprise, and showed that Bonaparte had at one

time carried his offers of concession considerably farther than the public had supposed, there prevailed so general a distrust towards him, that Mr Whitbread stood almost alone in the opinion that the negotiation ought to have been continued. After some renewed discussions on Mr Windham's military measures, Lord Henry Petty, then chancellor of the exchequer, brought forward a plan of finance, which, assuming the expense of the current year as equal to that of subsequent years of war, professed to provide, without new taxes, for a contest of fourteen years or more. This plan contained an anticipated calculation of the loans necessary for several years to come, and supposed that a sum equal to ten per cent. on each loan should be appropriated from the war taxes, of which five per cent. should serve to pay the interest of the loan, and the other five per cent. form a sinking fund, which, by the operation of compound interest, would redeem the capital in fourteen years; leaving the whole ten per cent. again applicable to the same purpose should the war continue. That this plan possessed, no more than those of Pitt or Vansittart, the merit of increasing the productive power of our revenue, has been already shown by Dr Hamilton in his well-known *Treatise on the National Debt*. Its merit, had it been tried, would have been found to consist, as that of such plans generally does, in a support, perhaps a temporary increase, of public credit. It may even be questioned whether the same ministry, had they continued in office, would have restricted themselves to a limited expenditure in 1808, when the Spanish struggle called forth such a burst of national enthusiasm. There cannot, however, be a doubt that they would have avoided the orders in council, which, by depriving us of the unseen but powerful aid of neutral traffic, gave the first great blow to our bank paper, and consequently to our public funds.

The bill for the abolition of the slave-trade was now brought forward with all the weight of government support, and carried by triumphant majorities; in the Lords by a hundred to thirty-six, in the Commons by two hundred and eighty-three to sixteen. This prompt termination of a struggle of twenty years showed how easily the measure might have been carried had not Mr Pitt declined to give it ministerial support; a course suggested to him probably by a dread of offending the West India planters, but founded in a great measure on misapprehension, since the most respectable part of that body, the proprietors of long-settled estates, were far from being adverse to the abolition, calculated as it was to prevent that superabundance of produce which to them is the most serious of evils. This proved the last important bill of the Grenville ministry, whose removal from office took place very unexpectedly, in consequence of a difference with the sovereign about the Irish Catholics.

The bill which produced this sudden change was introduced by Lord Howick on the 5th of March, and entitled, "A bill to enable his majesty to avail himself of the services of all his liege subjects in his naval and military forces in the manner therein mentioned;" that is, by their taking an oath contained in the bill, after which they should be left to the free exercise of their religion. Here, as in the case of the American intercourse with the West Indies, the intention was less to introduce a new practice, than to permit by law what was already permitted by connivance. The draught of the bill had been previously submitted to the king, and returned by him without objection; but the royal attention was more closely drawn to it on its introduction into parliament, and on a vehement opposition from Mr Perceval, who described it as part of a system of dangerous innovation, and as a precursor of the abolition of all religious tests. The king now intimated his disapprobation of the bill to ministers, who endeavoured to modify

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it, but still without succeeding in rendering it acceptable to their sovereign. They then felt the necessity of withdrawing the bill, but inserted in the cabinet minutes a declaration, reserving to themselves two points: the liberty of delivering their opinion in parliament in favour of the proposed measure, and of bringing it forward at a future period. This minute was unfortunately couched in terms too positive, if not disrespectful to the king, who, always tenacious on the Catholic question, and never personally cordial with Lords Grenville and Howick, insisted that they should pledge themselves in writing never to press him again on the subject. Ministers declining to comply, the king consulted with Lord Eldon about forming a new ministry, and, receiving a ready assurance of the practicability of such a measure, refused to listen to a modified acquiescence with his late order, offered rather tardily by Lord Grenville. Ministers gave up the seals of office on 25th March; and next day the change and the causes which led to it were fully discussed in parliament. A short adjournment now took place, after which there occurred some remarkable trials of strength between the two parties. An independent member, Mr Brand, with reference to the conditions on which the ministry had come into office, made a motion, that it was contrary to the duty of members of the cabinet to restrain themselves by a pledge from advising the king on any subject. This motion produced a very long debate, but was lost by two hundred and fifty-eight against two hundred and twenty-six; while a corresponding motion in the Lords was lost by a hundred and seventy-one to ninety. A subsequent proposition, to express the regret of the house at the removal from office of so firm and stable an administration, was lost by two hundred and forty-four against a hundred and ninety-eight; and it became apparent, that in parliament, as at court, the fall of the Grenville ministry was decided.

It remains to make a few observations on their conduct when in office; and here an impartial inquirer will not be long in discovering that both their merits and demerits have been greatly exaggerated. Their war measures proved unimportant, particularly in the point which, in the then ardent state of the public mind, superseded all others—the annoyance of France; and the result was, an unconsciousness in the greater part of the people of what was really valuable in their views and conduct. Yet Mr Fox brought to the department of foreign affairs an intimate knowledge of continental politics, and an exemption from national prejudices, far, however, from being accompanied, as the vulgar supposed, by an indifference to our national interests. Lord Grenville, if naturally less conciliating, and less fitted for grand views, possessed a practical knowledge of business, and had become aware in retirement of the various errors which had arisen from a too early introduction into office. They had a liberal feeling towards Ireland and the United States; and though by no means lukewarm in their resistance to Bonaparte, they all held the impracticability of making any impression on his power by force of arms, until the occurrence of some combination of circumstances which should justify a grand and united effort. In what manner they would have acted had they been in power when the general insurrection in Spain burst forth, the public have no means of judging; so different is the language, and even the feeling, of politicians when in and out of office. Several of their measures, such as the introduction of the lord chief justice to a seat in the cabinet, and the assent to the appointment of such a commander as Whitelocke, were singularly ill-judged. To place Lord Grey, and after him Mr T. Grenville, at the head of the admiralty, was to declare to the public that professional knowledge was unnecessary in that high station, as if its

effects had not been most beneficially displayed in the administration, short as it was, of Lord Barham. Finally, their intemperate declaration in the cabinet minute of the 12th of March evinced a strange miscalculation of their strength, when put in opposition to the personal will of the sovereign and the existing prejudices of the public. The result was, that their fall caused no regret to the majority of the nation, and that the errors of their successors excited no wish for their recall.

Of the new ministry, the efficient members were, Mr Perceval, chancellor of the exchequer; Mr Canning, minister for foreign affairs; Lord Castlereagh for the war, and Lord Liverpool for the home department. One of their first measures was a prorogation of the parliament, followed by a dissolution, which gave them, in the elections, the advantage so lately enjoyed by their predecessors, with the further advantage of an alarm, strangely excited in the public mind, on the ground of popery. The new parliament met on the 22d of June, and, after passing the bills requisite for the army, navy, and other current business, was prorogued on the 14th of August.

The alternation of fortune by sea and land was so great, that 1806 had hardly commenced when fresh successes were obtained over the French navy. A division of the Brest squadron, after landing troops in the Spanish part of St Domingo, was overtaken by a superior force, and three sail of the line captured and two burned. Admiral Linois, returning from India, was captured in the Maren-go of eighty guns; and, at a subsequent date, of a squadron of frigates detached from Rochefort for the West Indies, four fell into our hands.

It was under these circumstances that a negociation for peace was for some months carried on at Paris. It began in consequence of an overture from Talleyrand, eagerly embraced by Mr Fox; and Lord Yarmouth, who happened to be under detention in France, was made the first medium of communication and conference. In its more advanced stage, the negociation was intrusted to Lord Lauderdale; and at one period, namely, in September, the conciliatory tone of the French inspired a hope of peace; a hope soon disappointed, when it was found that the offers of Bonaparte were followed by the demand of Sicily, and that, whilst professing an ardent wish for peace, he was extending his usurpations in Germany, and secretly preparing to subvert the power of Prussia.

The humiliation of Austria left Bonaparte at liberty to direct his manœuvres, both diplomatic and military, against her northern rival. Affecting great indignation at the friendly disposition shown by Prussia, in the preceding autumn, towards the coalition, he demanded the cession of a portion of her territory in the south-west, and, in return, transferred to her Hanover, in the hope of kindling the flame of discord between her and England. The Prussians accordingly entered Hanover; the local government making no resistance, and our cabinet taking no retaliatory measure, except the detention of vessels bearing the Prussian flag; a measure adopted, not in the spirit of hostility, but to satisfy popular clamour in England. The discussions between France and Prussia continued during the summer of 1806, and, from the blind confidence of one party, and the artifice of the other, assumed at last a serious aspect. War was declared; the battle of Jena deprived Prussia of her army, her capital, and her fortresses; and her court was fugitive in the north of Poland, ere there had been time to send, or even to concert the sending of succours from England. The Grenville ministry, less eager than their predecessors to embark in continental war, confined themselves to sending a general officer, Lord Hutchinson, to the Russian head-quarters, and to the grant of a limited subsidy. For some time the difficulties of the country, and the firm

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age III. resistance of the Russians, particularly at Eylau, encouraged the hope of arresting the progress of Bonaparte; but this hope was disappointed by the battle of Friedland, and still more by the approximation of the court of Russia to that of France.

The treaty of Tilsit excited alarm, less from its specific provisions, than from the probable consequences of the co-operation of the contracting powers. Among these, some persons reckoned, or pretended to reckon, the equipping against us of the Danish navy, a force of sixteen sail of the line, not manned or ready for sea, but capable of being fitted out without a great sacrifice. The ministry of 1807 founded their claim to public favour on a system of vigour,—on a course altogether opposite to the cautious calculations of their predecessors. No sooner were they apprized of the treaty of Tilsit, than, without waiting for its effect on the Danish government, they determined on the as yet unexampled measure of taking forcible possession of a neutral fleet. A powerful armament of twenty thousand troops and twenty-seven sail of the line, prepared ostensibly against Flushing and Antwerp, was directed to proceed to the Sound, there to await the result of a negotiation opened at Copenhagen. This negotiation was intrusted to a special envoy, who represented the danger to Denmark from France and Russia, and demanded the delivery of the Danish fleet to England, under a solemn stipulation of its being restored on the termination of our war with France. The Danes, justly offended at this proposal, and aware that their agreeing to it would expose them to the loss of the continental part of their territory, refused: our envoy returned on board our fleet: our army was landed, and Copenhagen invested by sea and land, while a part of our fleet cut off all communication between the continent and the island on which it stands. After a fortnight passed in preparations, a heavy fire was opened on the city, and continued during two days with very great effect. A capitulation now took place; the citadel, dock-yards, and batteries were put into our hands, and no time was lost in fitting out the Danish men of war for sea. All stores, timber, and other articles of naval equipment, belonging to government, were taken out of the arsenals, embarked, and conveyed to England.

The expedition to Copenhagen excited much discussion and difference of opinion in England, particularly when it was avowed that ministers had no evidence of an intention in Russia to coerce Denmark, and still less of a disposition in Denmark to give way to such coercion. The only tenable ground was, to acknowledge at once that the Danes had given no provocation whatever; that their conduct had been strictly neutral; but that they would evidently have been unable to defend themselves had Russia and France united against them. Still it was extremely questionable, whether we, to ward off a contingent annoyance, should have committed a present aggression. The success of our attempt, considering our naval superiority, the insulated position of Copenhagen, and its unprepared state, admitted of little or no doubt. But this was not all. There remained further and more important considerations; the odium that would be thus excited against us in the Danish nation, and that closer approximation of Russia to France, which could hardly fail to follow so open an affront to a power professing to take a lead in the political arrangements of the Baltic.

The Cape of Good Hope surrendered in January 1806 to an armament sent from England. After this, Sir Home Popham, who commanded the naval part of the expedition, ventured to make, without the sanction or even knowledge of government, an attempt on Buenos Ayres. Our troops, although under two thousand in number, effected a landing, and occupied the town. Intelligence to this effect having

reached England, the popular notion that Buenos Ayres would prove a great market for our manufactures, induced government to take measures for completing the new conquest. And though the inhabitants soon rose and drove out the feeble detachment under Sir Home Popham, an armament, which arrived in January 1807, under the command of Sir Samuel Auchmuty, attacked the strongly fortified town of Monte Video, and carried it by assault, which was conducted with great skill and gallantry. But a very different fate awaited our next enterprise,—an attack on Buenos Ayres, planned by General Whitelocke, an officer wholly unfit for this or any other kind of service. Our troops, eight thousand in number, were, under every disadvantage, successful in some parts; but failing in others, the result was a negotiation, and a convention that we should withdraw altogether from the country, on the condition of our prisoners being restored.

But in another part of the world, and against an enemy in general far more formidable, our arms had been attended with success. Naples had been engaged in the coalition of 1805, with a view to assail the French on the side of Lombardy; but an Anglo-Russian army, landed for that purpose, had been prevented from marching northward by the disastrous intelligence from Germany. They were subsequently re-embarked, the British withdrawing to Sicily, and Palermo becoming once more the refuge of the Neapolitan court. That court, eager to excite insurrection against the French in Calabria, prevailed on General Sir John Stuart, in the beginning of July 1806, to lead thither a detachment of our troops. They landed, and soon after received intelligence, that at Maida, distant only ten miles from our encampment, was a French corps, already equal to our own, and hourly expecting considerable reinforcements. Our troops marched to attack them on the morning of 4th July, and at nine o'clock drew near to their position, which had a river in front. But General Regnier, who commanded the French, having received his reinforcements the preceding evening, and seeing that our small army was unprovided with cavalry, caused his men to march out of their camp, and advance to charge us on the plain. Our force, including a regiment landed that morning, was nearly six thousand; that of the enemy above seven thousand. The French, who knew our troops only by report, marched towards them with great confidence, not expecting them to stand the charge. Our line, however formed, faced the enemy, and advanced; the forward movement of the opposing lines lessening the intervening distance in a double ratio. On a nearer approach the enemy opened their field-pieces, but, contrary to the usual practice of the French artillery, with little effect. Not so the British; for when our artillery opened, every shot told, and carried off a file of the enemy's line. The lines were now fast closing, being within three hundred yards distance, and a fire having commenced between the sharpshooters on the right. At this moment the enemy seemed to hesitate, halted, and fired a volley. The British line also halted, returned the salute, and having thrown in a second volley, advanced at full charge. The enemy, apparently resolved to stand the shock, kept perfectly steady, till, intimidated by the advance, equally rapid and firm, of an enemy whom they had been taught to despise, their hearts failed, and they faced about and fled, but not in confusion. When they approached within a short distance of their second line, they halted, fronted, and opened a fire of musketry on our line, which did not follow up the charge to any distance, but halted to allow the men to draw breath, and to close up any breaks in their formation. They were soon ready, however, to advance again; and the order to charge having once more been given, our brave troops rushed forward to the onset, the enemy, as

Reign of George III. before, making a show of determination to remain firm. But their courage again failed them; they would not stand the shock; and giving way in greater confusion than before, their first line was thrown upon the second, and both became intermingled in great disorder. Seeing himself thus completely foiled in his attack on the front, and being driven back more than a mile, Regnier now made an attempt to turn the left flank; but this was defeated by the British second line, which, refusing its left, opened an admirably directed and destructive fire, which quickly drove back the enemy with great loss. Their efforts were equally unsuccessful against the right of our line, which also charged in the most gallant and decisive manner, and the field of battle remained entirely in our possession.¹ The French loss in killed and wounded was upwards of two thousand; ours only between three hundred and four hundred. This brilliant exploit produced the evacuation of part of Calabria by the French, but had no other result; our small force returning soon afterwards to Sicily.

Our next operation in the Mediterranean was an unsuccessful menace of the Turkish capital. That court refusing to enter into our plans of hostility to France, our ambassador withdrew, and re-entered the Straits of the Dardanelles with a squadron of seven sail of the line, exclusive of frigates and bombs. They suffered considerably in passing the narrow part of the straits, between the ancient Sestos and Abydos, now called the castles of Romania and Natolia. Anchoring at a distance of eight miles from Constantinople, our admiral, Sir J. Duckworth, threatened to burn the seraglio and the city, but in vain. The Turks continued adverse to our demands, and employed the interval, wasted by the British commander in useless negotiations, in strengthening the formidable batteries of the Dardanelles. It soon became indispensable therefore to withdraw, and to repass the straits; but this was not accomplished without a considerable loss in killed and wounded, the cannon at the castles being of great size, and discharging granite balls, one of which, weighing eight hundred pounds, cut in two the mainmast of the Windsor man of war. A descent made soon after in Egypt was equally unfortunate. A detachment of troops landing at Alexandria, occupied that town, but suffered a severe loss at Rosetta, and eventually withdrew, on the Turks consenting to give up the prisoners they had taken. Peace was soon after concluded with the Turks, and our operations in the Levant were confined to the capture of the Ionian Islands from the French. Zante, Cephallonia, Ithaca, and Cerigo, were taken by a small expedition in 1809, and Santa Maura the succeeding year.

On the side of Sicily, our commanders, though pressed by the court of Palermo, refused to make descents on Calabria, which could lead to nothing but partial insurrections, followed, on the return of a superior force, by the death of the most zealous of our partisans. We took, however, in June 1809, the small islands of Ischia and Procida, near the coast of Naples; and, in the autumn of 1810, repelled an attempt of Murat to invade Sicily. A body of nearly four thousand Italians, who had landed on this occasion, were driven back with loss; a failure which, joined to our decided naval superiority, put an end to all attempts of the kind.

The hostility of Russia consequent on her connection with France produced a menaced invasion of Sweden, now our only ally in the north. To aid in repelling it, Sir John Moore was sent to Gottenburg with a body of ten thou-

sand men. This force did not land; but the general, repairing to Stockholm, entered into communications with the king, and had the mortification of finding that prince wholly incapable of rational conduct, and bent on projects which would necessarily involve the sacrifice of the British troops. On this he lost no time in returning to Gottenburg, and soon afterwards brought back the armament to England, to be employed on a more promising service.

The influence possessed by Bonaparte over Spain had long inspired him with the hope of overawing Portugal, and of obliging that country to dissolve her alliance with England. To this hope the humiliation of Germany, and his new alliance with Russia, gave double strength; and, in the latter part of 1807, the most peremptory demands were made on the court of Lisbon. To part of these, implying the exclusion of British merchantmen from the harbours of Portugal, compliance was promised; but the demand of confiscating English property, and detaining the English resident in Portugal, was met by a decided refusal. A French army now marched towards Lisbon, and threatened openly to overthrow the house of Braganza; but the latter, after some momentary indications of indecision, took the determination of abandoning their European dominions, and proceeding to Brazil. This spirited, and by many unexpected measure, was carried into effect in the end of November, and Lisbon was forthwith occupied by French troops. A few months afterwards occurred the transactions at Bayonne, and the general declaration of hostility by the Spaniards to Bonaparte. Our cabinet now determined to postpone all other projects to that of a vigorous effort in Spain and Portugal. With that view, an armament of ten thousand men, collected at Cork, and said to be intended for Spanish America, sailed in July for the Peninsula, and offered its co-operation to the Spaniards in Galicia. They, however, thought it best that we should confine our aid to Spain to arms and money, directing our military force against the French army in Portugal. Accordingly, our troops, after passing an interval at Oporto, were landed to the southward, in Mondego Bay, where, after receiving the co-operation of another division of British, and of a few Portuguese, they proceeded on their southward march towards Lisbon. The first actions took place with French detachments at the small town of Obidos, and at Rorica. Neither was of much importance: the French, inferior in number, retreated; but their commander at Lisbon was Junot, an officer trained in the school of revolutionary enterprise, and disposed, like most of his brethren at that time, to make light of British land forces. He determined forthwith on assuming offensive operations, advanced from Lisbon, and reaching the British army on the 21st of August 1808, attacked it in its position at the small town of Vimiero. The force on either side was about fourteen thousand men. The French marched to the onset in columns, with their wonted confidence; but they had to encounter an enemy equally firm with Germans or Russians, and far superior in discipline, equipment, and activity. The principal column of the enemy, headed by General Laborde, and preceded by a multitude of light troops, mounted the face of the hill forming the crest of the British position, with great fury and loud cries, and, forcing in our skirmishers upon the lines, crowned the summit; but, shattered by a terrible fire of the artillery, breathless from their exertions, and riddled by a discharge of musketry from the fifteenth regiment at half-pistol shot distance, they were vigorously charged in front and flank, and overthrown.² Equal success attended our efforts in

¹ Stewart's *Sketches and Military Service of the Highland Regiments*, vol. ii. p. 265 et seqq. 2d edition.

² Napier's *History of the Peninsular War*, vol. i. p. 213.

of other parts of the line, and the loss of the enemy was three thousand men and thirteen pieces of cannon. The object now ought to have been to follow up our success, before the French had time to recover themselves, and fortify the almost impenetrable mountains on the road to Lisbon. In vain did Sir Arthur Wellesley urge this, first on Sir Harry Burrard, who had now taken the command, and next day on Sir Hew Dalrymple, who arrived and replaced him. Reinforcements were daily expected; and, till their arrival, neither of these officers could be persuaded to incur hazards for the attainment of an advantage which, from their unacquaintance with localities, they were not competent to appreciate. A precious interval was thus lost. The French occupied the passes, opened their negotiation in a tone of confidence, and obtained, by the treaty called the Convention of Cintra, a free return to France on board of British shipping. The ministry, though disappointed, determined to defend this convention; judging it indispensable, partly from the communications of Sir Hew Dalrymple, more from its bearing the unqualified signature of Sir Arthur Wellesley, who was, even then, their confidential military adviser. The public, however, called for inquiry; ministers felt the necessity of acceding; the three generals were ordered home from Portugal; and, after a long investigation, and divided opinions, the chief error was found to consist in stopping General Ferguson in the career of victory, when about to cut off the enemy's retreat to Lisbon, and in the loss of the twenty-four hours which followed the battle of Vimiero.

The public disappointment at the convention of Cintra was soon counterbalanced by gratifying intelligence from the Baltic. Bonaparte, whose plan was to subjugate all Europe, by making one nation instrumental in overawing another, had sent the Spanish regiments in his service into Denmark; but he could not prevent their receiving intelligence of the rising spirit of their countrymen, and the vicinity of a British fleet happily facilitated their evasion. Ten thousand Spaniards were thus brought off, and carried, with their arms, stores, and artillery, to join the standard of their country.

Meantime the command of our troops in Portugal was vested in Sir John Moore, and arrangements were made for moving them forward into Spain. But from the badness of the roads, it was necessary to advance in two divisions, one marching due east, and another north-east; while a further force, which had arrived from England at Corunna, was instructed to hold a south-east course. The lateral divisions received, in their progress, orders to adapt the direction of their march to existing circumstances; but the result was, that both converged towards the central division, conducted by Sir John Moore in person.

In their march our officers had an ample opportunity of witnessing the fallacious and exaggerated impressions entertained in England with regard to the supposed enthusiasm of the Spaniards. They saw a country wretchedly cultivated and thinly peopled; a nation hostilely disposed, indeed, to the French, but unaccustomed to exertion, and incapable of combination. Instead of recruits, supplies of provisions, or offers of voluntary service, all was inactivity and stagnation; and, amidst the general poverty, our commissariat had great difficulty in obtaining provisions. Another great source of perplexity was the want of information. The natives, whether in the civil or military service, were too ignorant and credulous to be capable of detecting exaggeration, or of distinguishing truth from falsehood; and our officers were obliged to judge for themselves under the most contradictory rumours.

Sir John Moore reached Salamanca on the 13th of November, aware that the Spaniards had been defeated at Burgos, and soon after apprised that a French corps was advancing

to Valladolid, within sixty miles of his front. In this situation he received from Madrid the most urgent solicitations to advance thither with his army, either in whole or in part. He knew the ardour of his country for the cause of Spain, and directed his movements in the view of complying, as far as should be at all advisable, with the representations pressed on him; but day after day the intelligence became more discouraging. At last, the fall of Madrid, ascertained by an intercepted letter of General Berthier, removed every doubt, and left him no other plan but that of uniting his three divisions, and determining on a retreat; but, as his army was now augmented to twenty-five thousand men, he determined, if possible, to strike a blow against the detached French army under Soult, stationed at some distance to the north-east. With this view, our troops advanced on the 11th of December towards the small town of Sahagun, and a partial action, which took place between the opposite vanguards, was to our advantage; but intelligence arriving that Bonaparte was directing, by the passes of the Guadarama, a superior force on a point in rear of the British, it became indispensable to make a prompt and uninterrupted retreat. Bonaparte, pressing forward with his vanguard, reached our rear at Benavente, saw, for the first time, British soldiers, and witnessed a cavalry action, in which several squadrons of his guard were very roughly handled, and their commanding officer, Lefebvre Desnouettes, made prisoner. Meanwhile, Soult, marching by a different road, hoped to cross our line of retreat at Astorga; and the Spaniards having abandoned the position which covered the access to that town, it required both prompt and skilful exertion to enable our army to occupy it before the enemy. Here, pressed as we were, it became necessary to destroy a great part of our camp equipage. Our army was ahead of the enemy, but had before it a long and difficult march over the mountains of Galicia. The weather was severe, provisions scanty, the inhabitants cold and unfriendly; while privations and disappointment relaxed the discipline of our soldiers, who called loudly to be led to action, as the close of their distress. Retreat, however, was unavoidable; and, in this state of suffering and insubordination, the army performed a march of more than two hundred miles; the general keeping in the rear to check the French, who followed with their usual audacity. At Lugo, about sixty miles from Corunna, circumstances seemed to justify our awaiting the enemy, and fighting a general battle. Our soldiers repaired with alacrity to their ranks, but Soult did not accept the challenge, and the retreat was continued. It closed on the 12th January 1809, having been attended with the loss of many men, from disorder, and the sacrifice of many horses, from want of forage, but without losing a standard, or sustaining a single check in action. On the 13th, 14th, and 15th, the sick and artillery were embarked on board our men of war; while the troops remained on shore, to await the enemy, and to cover the reproach of retreat by some shining exploit. This led to the battle of Corunna. On that day our position was good on the left, but very much otherwise on the right; thither, accordingly, the French pointed their strongest column, and thither also Sir John Moore repaired in person. He directed the necessary movements, first to obstruct, and afterwards to charge, the advancing enemy. These orders were gallantly executed, and the attack of the French repelled; but our lamented general received a wound, which soon after proved mortal, from a cannon ball, that struck him on the shoulder, and knocked him off his horse. Subsequent attacks, first on our centre, and next on our left, were equally foiled; and, in the evening, we occupied an advanced position along our whole line. Enough having now been done for the honour of our arms, the embarkation was continued on the 17th, and

Reign of George III. completed on the 18th, after which the whole set sail for England.¹

The session of 1808 was opened on 31st January by a speech of uncommon length, which enlarged on the Copenhagen expedition; our relations with Russia, Austria, and Sweden; the departure of the royal family of Portugal to Brazil; and our orders in council respecting neutrals. The chief debates of the session related to these subjects. The Copenhagen expedition was much canvassed, as unprovoked by Denmark, and incompatible with the honour of England. Still that measure received the support of a great majority, Mr Ponsonby's motion for the production of papers relating to it being negatived by two hundred and fifty to a hundred and eight, and a similar motion in the House of Lords by a hundred and five to forty-eight. Even a motion for preserving the Danish fleet, to be restored, after the war, to Denmark, was negatived in both houses.

The volunteer system had, since 1804, been greatly relaxed, and the country evidently stood in need of a more constant and efficient force. The Grenville ministry, adverse to the volunteer system, had determined to let it fall into disuse, and to replace it by a levy of two hundred thousand men, to be trained to act, not in battalions, but separately, and as irregulars, on the principle that local knowledge was the chief recommendation, and a continuance of previous habits the proper exercise, of such a force. The new ministry, however, pursued a different course, and passed an act for a local militia; a body which, with the exception of the officers, was composed of the lower orders, pledged to regular training during one month in the year, and subjected to all the strictness of military discipline. Such of the volunteers as chose were to remain embodied; the total of the local militia was about two hundred thousand, and the mode of levy was by a ballot of all persons, not specially exempted, between the age of eighteen and thirty-one.

The orders in council were frequently discussed during this session, but they were as yet imperfectly understood either in their immediate operation or in their consequences. Unfortunately for the advocates of moderation, Bonaparte now lost all regard to justice, and committed the most lawless of all his acts, the seizure of the Spanish crown. Indignation at this atrocity, and a firm determination to support the Spanish cause, were manifested by men of all parties, among whom were remarkable, as habitual members of opposition, the Duke of Norfolk and Mr Sheridan; the latter making, on this occasion, one of the most brilliant speeches of his latter years.

The session of 1809 was opened on 13th January by a speech declaring a decided determination to adhere to the cause of the Spaniards, notwithstanding the failure of the

campaign, and the retreat of our army under Sir John Moore. The intelligence that arrived soon after the death of that commander drew from the house a unanimous eulogy of his character, and regret for his fall. There still prevailed, both in parliament and the public, a strong attachment to the Spanish cause; and, in the various motions made by the opposition to censure ministers for mismanaging our armaments, or ill planning our operations, the minority seldom exceeded a third of the members present.

But the attention of parliament and the public was withdrawn even from this interesting question, and absorbed by the charges against the Duke of York, brought forward by Colonel Wardle, on evidence given or procured by Mrs Mary Anne Clarke, a forsaken mistress of the duke. Ministers, unaware of the extent of the proofs, brought the inquiry before the house instead of referring it to a committee, and a succession of singular disclosures were thus made to parliament and the public. Of these the most remarkable were produced by the friends of the duke persisting in examinations begun under an impression of his entire innocence. It is hardly possible to describe how much this subject engaged the public attention during the months of February and March. Of the influence of Mrs Clarke in obtaining military commissions from the duke, and of her disposing of them for money, there could be no doubt. The question was, whether the duke was apprised of this traffic; and though he might not be aware of its extent, there seems hardly room to doubt that, in certain cases, he suspected its existence. The debate on the collective evidence was uncommonly long, being adjourned from night to night, and exhibited a great difference of opinion on the part of the speakers. Several resolutions, varying in their degree of reprehension, were proposed; and though those finally adopted condemned only the immorality of the connection formed by the duke, without asserting his knowledge of the pecuniary abuses, the result was his resignation of the office of commander-in-chief.

The success of this investigation prompted an inquiry into other abuses, particularly the sale of East India appointments, and disclosed a negotiation of Lord Castlereagh to barter a nomination to a Bengal writership, for the return of a member to parliament. The house declined to proceed to any resolution against his lordship, or to entertain a motion relative to the interference of the executive government in elections. A bill for parliamentary reform, brought in by Mr Curwen, was not directly opposed, but so materially altered in its progress as to be nugatory when it passed into a law. The further business of the session consisted in the annual votes for the public service, and in motions by Sir Samuel Romilly, on a sub-

¹ The following masterly defence of the necessity as well as the conduct of this celebrated retreat, is extracted from Napier's *History of the Peninsular War*, vol. i. p. 525.

"Lord Bacon observes, that 'honourable retreats are no ways inferior to brave charges, as having less of fortune, more of discipline, and as much of valour.' That is an honourable retreat in which the retiring general loses no trophies in fight, sustains every charge without being broken, and finally, after a severe action, re-embarks his army in the face of a superior enemy without being seriously molested. It would be honourable to effect this before a foe only formidable from numbers, but it is infinitely more creditable, when the commander, while struggling with bad weather and worse fortune, has to oppose veterans with inexperienced troops, and to contend against an antagonist of eminent ability, who scarcely suffers a single advantage to escape him during his long and vigorous pursuit. All this Sir John Moore did, and finished his work by a death as firm and glorious as any that antiquity can boast of."

"Put to Lord Bacon's test, in what shall the retreat to Corunna be found deficient? something in discipline, perhaps, but that fault does not attach to the general. Those commanders who have been celebrated for making fine retreats were in most instances well acquainted with their armies; and Hannibal, speaking of the elder Scipio, derided him, although a brave and skilful man, for that, being unknown to his own soldiers, he should presume to oppose himself to a general who could call to each man under his command by name; thus inculcating, that unless troops be trained in the peculiar method of a commander, the latter can scarcely achieve any thing great. Now Sir John Moore had a young army suddenly placed under his guidance, and it was scarcely united, when the superior numbers of the enemy forced it to a retrograde movement under very harassing circumstances; he had not time, therefore, to establish a system of discipline; and it is in the leading events, not the minor details, that the just criterion of his merits is to be sought for."

ject which has been but lately followed up with effect, the amendment of our criminal law, by lessening the severity, but insuring the application, of punishments.

The failure, in autumn, of the expedition to the Scheldt, and the resignation of the Duke of Portland when on the verge of the grave, led to the disclosure of a remarkable secret in cabinet history—the attempts made, during several months, by Mr Canning, to obtain from the Duke of Portland the removal of Lord Castlereagh from the war department, on the ground of incompetency to the station. On making this mortifying discovery, the complaint of Lord Castlereagh was, not that his brother minister should think with slight of his abilities, but that, during all the time that he laboured against him, he should have maintained towards him the outward manner of a friend. This led to a duel, followed, not by serious personal injury, but by the resignation of both; causing, in the ministry, a blank which, to all appearance, could be filled only by bringing in the leaders of opposition. An overture to this effect, whether sincere or ostensible, was made by Mr Perceval. Lord Grenville, on receiving it, came to London; Lord Grey, more indifferent about office, answered it from his seat in Northumberland; but both declared a determination to decline taking part in the administration so long as the existing system should be persisted in. Marquis Wellesley, who had gone as ambassador to the Spanish junta, now returned, and was invested with the secretaryship for foreign affairs. Mr Perceval was appointed premier; and the new ministry, feeble as they were in talent, received the support of a decided majority in parliament; so general was the hatred of Bonaparte, and the conviction that our safety lay in a vigorous prosecution of the war.

Our failure in the campaign of 1808–9 was far from discouraging our government from new efforts. Austria was preparing to attack the allies of Bonaparte in Germany; and the Spaniards, though repeatedly beaten in close action, continued a destructive warfare in the shape of insulated insurrections. Sir Arthur Wellesley was accordingly sent with a fresh army to Lisbon, and General Beresford with a commission to discipline the Portuguese forces. They found the French threatening Lisbon in two directions; from the east, with a powerful force under Victor; from the north, with a less numerous body under Soult. Sir Arthur Wellesley advanced against the latter, drew near his rear guard on the banks of the Douro, drove it over that river, and crossing immediately after, forced Soult to a precipitate retreat from Oporto. Returning to the southward, our commander obliged the force under Victor to draw back; and having, some time after, effected a junction with a Spanish army, took the bold determination of moving forward in the direction of Madrid by the valley of the Tagus. The French now sent reinforcements to the army of Victor, and the opposing forces met at Talavera de la Reyna, a town to the north of the Tagus, near the small river Albarche. The British force was nineteen thousand, and that of the Spaniards above thirty thousand; the French army amounted to upwards of forty-seven thousand men. Lord Wellington was too distrustful of the discipline of his allies to venture an attack on the French, but he saw no imprudence in trying, as at Vimiero, the chance of a defensive action. Stationing the Spaniards on strong ground on the right, he occupied with the British a less strong but yet favourable position on the left. Against the army thus posted the French advanced in the afternoon of 27th July, driving in our advanced post, and attacking an eminence on our left. This eminence, the key of the position, would have been assailed from the beginning by Bonaparte, with a formidable column; but the rifle corps and a single battalion sent against it by Victor were speedily

driven back by our troops. A second attack, made in the evening by three regiments of infantry, was at first successful, but it was soon repelled by a fresh division of British troops. The main body of the French, surprised at this failure, waited impatiently for morning to renew the attack; they advanced, marched through a destructive fire to the top of the rising ground, approached our cannon, and were on the point of seizing them, when our line rushed forward with the bayonet, and drove them back with great loss. Their commanders now determined to suspend all attacks on the right of the position, and to bring a mass of force against the front and flank of the British left. A general attack took place at four in the afternoon, and the troops directed against the height now consisted of three divisions of infantry, or about eighteen thousand men. Crossing the ravine in their front, the first division scaled the height amidst volleys of grape-shot; but its general fell, a number of officers shared his fate, and retreat became unavoidable. No attempt was now made to carry the eminence in front; attacks were made on its left and right, but all were ineffectual. The left, indeed, was the weak part of the British position; but an event, unfortunate in its immediate results, served to check their audacity in this quarter, and to prevent the renewal of any serious attempt against this part of our line. Sir Arthur Wellesley having observed a French division (Villatte's), preceded by grenadiers, and supported by two regiments of light cavalry, advancing up the valley against the left, while another (Ruffin's) was directing its march towards a mountain which flanked the left transversely, in order to turn it, directed Anson's brigade of cavalry, consisting of the twenty-third light dragoons and the first German hussars, to charge the head of these columns. The order was instantly obeyed; the brigade moved off at a canter, and increasing its speed as it advanced, rode headlong against the enemy; but in a few moments it came upon the brink of a cleft which was not perceptible at a distance. The French threw themselves into squares, and opened their fire. Colonel Arentschild, commanding the German hussars, promptly reigned up, exclaiming, "I will not kill my young men;" and it would have been well if the twenty-third had followed the example of the experienced veteran. But English impetuosity was not to be restrained. The twenty-third rode wildly down into the hollow; men and horses fell over each other in dreadful confusion; yet the survivors, still untamed, mounted the opposite banks by twos and threes; and Major Ponsonby rallying all who came up, they passed through the midst of Villatte's columns, reckless of the musketry from each side, and fell with inexpressible violence upon a brigade of French chasseurs in the rear. The combat was fierce but short. Attacked by Victor's Polish lancers and the Westphalian light horse, exposed on both sides to the fire of the squares of infantry, and engaged with the chasseurs in front, they were at length broken; and those who were not killed or taken escaped behind a Spanish division, leaving behind about half the number which went into action. But, however unfortunate in its circumstances, the desperate fury of this charge appalled the French, and effectually checked their advance on a point where the chances of success were otherwise much in their favour. This battle, which was one of hard, honest fighting, reflected little credit on the generalship of either party. The loss on both sides was unusually severe; that sustained by the British, in the two days' fighting, amounting to upwards of six thousand in killed and wounded, and that of the French to about seven thousand four hundred.

Notwithstanding this dear-bought success, it became necessary for the allied army to retire; the French divi-

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sions in the north-west of Spain having united and begun to march in a direction which would soon have brought them on our rear. Our army crossed the Tagus at Arzobispo, and held a south-west course till it reached Badajoz, where it remained during the rest of the year, in a position which covered that fortress, and showed the Spaniards that we had not abandoned their cause, however dissatisfied with their co-operation, and convinced of the impracticability of combining offensive operations with such allies.

While by land the fortune of war was thus chequered, at sea the French experienced nothing but disasters. Eight ships of the line in Brest, eluding our blockade, sailed southward to Basque Roads, near Rochefort, where they were joined by four sail of the line from that port. Our fleet blockaded them in their new stations; and preparation having been made to attempt their destruction by fire-ships, Lord Cochrane sailed in with these dreadful engines on the evening of the 11th of April 1809. Our seamen broke the boom in front of the French line, disregarded the fire from the forts, and, after bringing the fire-ships as near to the enemy as possible, set fire to the fuses and withdrew in their boats. The French, surprised and alarmed, cut their cables and run on shore. Four sail of the line that had accompanied Lord Cochrane attacked them, and though the main body of our fleet was prevented by the wind and tide from coming up, the result of our attack, and of the effect of the fire-ships, was the loss of four sail of the line, and one frigate burned or destroyed. At a later period of the year a French convoy of three sail of the line and eleven transports, proceeding from Toulon to Barcelona, was attacked and destroyed by a division from Lord Collingwood's fleet.

Doubtful as was the aspect of the great contest in Spain, it employed a large portion of Bonaparte's military establishment, and revived the hope of independence in Germany. Prussia was too recently humbled, and too closely connected with Russia, at that time the ally of France, to take up arms; but Austria was unrestrained, and thought the season favourable for a renewal of the contest. Her troops took the field in April, and invaded Bavaria under the Archduke Charles, but were worsted at Eckmühl, after a series of the most splendid military combinations, and Vienna was a second time entered by Bonaparte. His impatience to attack the Austrian army on the north side of the Danube led to his failure in the sanguinary battle of Aspern, and necessitated the advance of almost all his regular troops into the heart of Germany, at a distance of several hundred miles from the coast. But the battle of Wagram at length decided the fate of the campaign, and placed Austria again at the feet of France.

Of the naval stations exposed in consequence of the withdrawal of the troops, by far the most important was Antwerp, situated on a part of the Scheldt of as great depth and as accessible to ships of the line as the Thames at Woolwich. From Antwerp to the mouth of the Scheldt is a distance of about fifty miles. The first fortified town, on coming in from the sea, is Flushing, the batteries of which, though formidable, are not capable of preventing the passage of ships of war through a strait of three miles in width. Our armament, consisting of nearly forty sail of the line and thirty-eight thousand military, was the most powerful that had ever left our shores. It crossed the narrow sea with a fair wind; and, in the morning of the 30th of July, the inhabitants of the tranquil coast of Zealand were astonished by an unparalleled display of men of war and transports. Our troops landed and forthwith occupied Walcheren and the islands to the north. No resistance was offered except at Flushing; but our commander, the Earl of Chatham, showed himself wholly in-

capable of discriminating the causes of success or failure when he stopped to besiege that place. It ought only to have been watched, whilst the main body of the troops should have landed in Dutch Flanders, on the south of the Scheldt, and marched straight to Antwerp, which, even with artillery, might have been reached in a few days. The French, never doubting the adoption of this plan, and conscious of their weakness, had moved their men of war up the river, beyond the town, previous to setting them on fire. But a delay of a fortnight took place before Flushing, and time was thus given to the enemy to strengthen the forts on the river, and to collect whatever force the country afforded. Still, as an attack by water was not indispensable to success, there yet remained a chance; ten days more, however, were lost; the relinquishment of the main object of the expedition became thus unavoidable; and the only further measure was to leave a body of fifteen thousand men in the island of Walcheren. There, accordingly, they remained during several months, suffering greatly from an unhealthy atmosphere, and doing nothing except destroying, on their departure, the dock-yards of Flushing. Never was a gallant force more grossly misdirected; the choice of our general was as unaccountable as the choice of Mack in 1805; and the historian, were he to reason from the inferior numbers of the enemy, might pronounce this expedition as inglorious to our arms as the battles of Poitiers and Agincourt were to our enemies of a former age.

The session of 1810 opened on the 28th of January, and the leading subject of debate was our unfortunate expedition to Walcheren and the Scheldt. A motion leading to inquiry was carried after a close division, namely, a hundred and ninety-five to a hundred and eighty-six; and the investigation was conducted chiefly at the bar of the House of Commons, a secret committee being appointed for the inspection of confidential papers. The Earl of Chatham, and other officers concerned in planning or conducting the expedition, were examined. The inquiry lasted several weeks, and disclosed, clearly enough, the imbecility of our commander; but the speeches of the opposition were pointed, not against the management of the expedition, but against its expediency as an enterprise; not against the general, but the cabinet. In this they were not seconded by the majority of the house. On the policy or impolicy of the expedition being put to the vote, the former was supported by two hundred and seventy-two in opposition to two hundred and thirty-two; and even the less tenable ground of keeping our soldiers in an unhealthy island for three months after relinquishing all idea of an attempt on Antwerp, was vindicated by two hundred and fifty-three votes against two hundred and thirty-two; a decision too remarkable to be forgotten, and which has since stamped this with the name of the Walcheren Parliament. The only ministerial change consequent on the inquiry was the removal of Lord Chatham from his seat in the cabinet, and from the master-generalship of the ordnance; but this was in consequence of privately delivering a statement to the king, professing to vindicate himself at the expense of Sir Richard Strachan and the navy. The resolution adopted on this occasion was, "that the house saw with regret that any such communication as the narrative of Lord Chatham should have been made to his majesty, without any knowledge of the other ministers; that such conduct is highly reprehensible, and deserves the censure of the house."

The exclusion of strangers from the gallery of the house during the Walcheren inquiry gave rise to a discussion which, though at first unimportant, soon engaged much of the public attention. A Mr John Gale Jones, well known among the demagogues of the age, and at that

time president of a debating club, animadverted on the House of Commons in a handbill, in a style which induced the house to order his commitment to Newgate. A few weeks after, Sir Francis Burdett brought in a motion for his liberation, on the broad ground that the house had no right to inflict the punishment of imprisonment in such a case. Baffled in this way by a great majority, Sir Francis wrote and printed a letter to his constituents, denying this power, and applying contemptuous epithets to the houses. This imprudent step provoked a debate, which ended in a resolution by the House of Commons to commit Sir Francis to the Tower. The speaker issued his warrant, and the serjeant at arms carried it to the house of Sir Francis, but withdrew on a refusal of Sir Francis to obey. Next day the serjeant repeated his demand, accompanied by messengers; but the populace had by this time assembled in crowds near the baronet's house, and prevented his removal until an early hour on the 9th, when the civil officers burst into his house, put Sir Francis into a carriage, and conveyed him to the Tower in the midst of several regiments of horse. Sir Francis brought actions against the speaker and other officers; but they fell to the ground by non-suits, and he continued in confinement during the remainder of the session.

Among the further acts of this session were two which regarded Scotland; one for the increase of the smaller church livings, of which none in this part of the kingdom are now under L.150; the other relative to judicial proceedings, and reducing the heavy expenses caused by the compulsory extract of office papers. The court of session had been previously divided into chambers by an act passed in 1808; and the trial by jury in civil causes was introduced into Scotland by an act of 1815.

We turn with impatience from the banks of the Scheldt to a scene more honourable to our arms. Our troops under Sir Arthur Wellesley, now Lord Wellington, had passed the winter in the interior of Portugal, moving northward as spring advanced, but delaying active operations. Offensive war was unsuited to our situation, and the French awaited reinforcements from the north. Bonaparte's determination now was to make Massena penetrate into Portugal, and to expel those auxiliaries who were the main-spring of the obstinate resistance experienced by him in Spain. The first enterprise of the French army was the siege of the frontier fortress of Ciudad Rodrigo, which surrendered on the 10th of July. The next object of attack was the Portuguese fortress of Almeida, which was invested in the end of July, and taken unfortunately too soon, in consequence of the explosion of the magazine. Soon after, the French army, now a formidable body, advanced into Portugal, Lord Wellington retiring before them, but determined to embrace the first opportunity of fighting on favourable ground. This occurred when occupying the highest ridge of the mountain of Busaco, directly in face of the enemy. The French, always impetuous, and not yet aware of the firmness of our men, marched up the mountain; one division reached the top of the ridge, where they were immediately attacked by a corps of British and Portuguese, and driven from the ground. In other parts the same result took place before the French reached the top. The loss on our side was a thousand men, that of the enemy between two and three thousand. Massena desisted from further attacks; but turning the flank of our position by a mountain, Lord Wellington, instead of heading the enemy's columns as they debouched from the defile, retreated in the direction of Lisbon, till he reached the ground which he had previously determined to occupy at Torres Vedras, in order to cover that capital.

The track of country to the north of Lisbon is not

above twelve miles in breadth, having the sea on the west and the Tagus on the east; the ground is extremely mountainous, and accessible only by passes, which were occupied by our troops and by batteries. Massena felt all the strength of this position, and the repulse at Busaco made him beware of a second encounter on disadvantageous ground. It was now for the first time that the impetuous bands of Bonaparte stopped short in their career; the armies remained opposite to each other above four months, during which time the French were greatly straitened for provisions and forage, being obliged to get convoys of biscuit under escort from France, whilst the command of the sea secured abundance to the British. Still Massena persisted in keeping his position, hoping to combine his operations with the army of Soult, then advancing from the south-east of Spain; an army which was but too fortunate, having attacked and taken by surprise a Spanish camp on the banks of the Guadiana. A number of boats had been constructed by Massena to cross the Tagus and co-operate with Soult; but in the beginning of March intelligence arrived that a convoy of biscuit long expected from France had been intercepted by the Guerillas. There was now an end to all offensive projects, and there remained only the alternative of retreat. It began on the 5th of March; the British followed; and the movements of either army, during a very long march, afforded an admirable exemplification of the rules of war. Our advance was so rapid that the French were frequently obliged to move hastily from one position to another; but they kept their best troops in the rear, collected in solid bodies, and affording no opening to our vanguard. The retreat lasted a month, and closed near the fortress of Almeida, on the frontier of Spain. The French, however, were soon again in a condition to act, and advanced to relieve Almeida, of which we had now begun the siege. The chief fighting took place on the 3d and 5th of May, near a village called Fuentes de Honor, which was repeatedly taken and retaken; but all their efforts were ultimately ineffectual, and Almeida was left to its fate. The chief part of the garrison, however, found means to escape by a nocturnal march.

Meanwhile the south or rather the south-west of Spain was the scene of very active operations. A body of Spaniards and British, marching northward from Gibraltar, approached the south-western extremity of the line occupied by the French troops engaged in the blockade of Cadiz. General Graham commanded the British, and on 5th March, at noon, was drawing near to the close of a long march, when he received intelligence of the advance of a French force. Knowing the height of Barrosa, which he had just left, to be the key of the position, he immediately counter-marched his corps, and had proceeded but a short way when he found himself unexpectedly near to the enemy, whose left division was seen ascending the hill of Barrosa, while their right stood on the plain within cannon-shot. To retreat was wholly unadvisable; an immediate attack was therefore determined on by General Graham, though unsupported by the Spaniards, and inferior to the enemy. A battery opened against the right division of the French caused them considerable loss, but they continued to advance until a charge with the bayonet drove them back with great slaughter. With the other division on the ascent of the hill there took place a similar conflict with a similar issue; both sides fought with courage, and both sustained a heavy loss; that of the British was above twelve hundred, and that of the enemy nearly double. The action lasted an hour and a half; our success was owing partly to the effect of our guns, but more to the firmness of the troops, who showed themselves determined rather to fall than yield.

About the same time, but at a distance of two hundred miles to the north of Cadiz, the important fortress of Ba-

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dajos fell into the hands of the French. This painful intelligence reached Lord Wellington when following up the retreat of Massena; and no time was lost in detaching a body of troops to the south of Portugal, to enable Marshal Beresford to advance and form the siege of Badajos. This called from the south the army of Soult, twenty-three thousand strong. On their approach Marshal Beresford raised the siege of Badajos, and prepared to meet the enemy with a force numerically superior, but of which only seven thousand consisted of British troops. Soult quitted Seville on the 10th May 1811, but Beresford remained in a state of uncertainty till the 12th, when he commenced raising the siege. On the 13th he held a conference with the Spanish at Valverde, where it was agreed to receive battle at the village of Albuera. The 14th was spent in a variety of movements; and in the morning of the 15th the British occupied the left of the position of Albuera, a ridge about four miles long, having the Aroya Val de Sevilla in rear, and the Albuera river in front. This position was now occupied by thirty thousand infantry, above two thousand cavalry, and thirty-eight pieces of artillery, eighteen of which were nine-pounders; but a brigade of the fourth division being still absent, the British infantry, "the pith and strength of the battle," did not amount to seven thousand. The French had fifty guns and above four thousand veteran cavalry, but only nineteen thousand chosen infantry; yet being of one nation, obedient to one discipline, and animated by one spirit, the excellence of their composition amply compensated for the inferiority of numbers. Soult examined Beresford's position on the evening of the 15th, and having learnt that the fourth division was left before Badajos, and that the corps of Spaniards under Blake would not arrive before the 17th, he resolved to attack the next morning. We shall now adorn our pages with the incomparable description of this conflict, given by the great historian of the peninsular war.

"The hill in the centre, commanding the Valverde road, was undoubtedly the key of the position if an attack was made parallel to the front; but the heights on the right presented a sort of table-land, trending backwards towards the Valverde road, and looking into the rear of the line of battle. Hence it was evident that, if a mass of troops could be placed there, they must be beaten, or the right wing of the allied army would be rolled up on the centre and pushed into the narrow ravine of the Aroya: the Valverde road could then be seized, the retreat cut, and the powerful cavalry of the French would complete the victory. Now the right of the allies and the left of the French approximated to each other, being only divided by a wooded hill, about cannon-shot distance from either, but separated from the allies by the Albuera, and from the French by a rivulet called the Feria. This height, neglected by Beresford, was ably made use of by Soult. During the night he placed behind it the artillery under General Ruty, the fifth corps under Girard, and the heavy dragoons under Latour Maubourg; thus concentrating fifteen thousand men and forty guns within ten minutes' march of Beresford's right wing, and yet that general could neither see a man nor draw a sound conclusion as to the real plan of attack.

"The light cavalry, the division of the first corps under General Werlé, Godinot's brigade, and ten guns, still remained at the French marshal's disposal. These he formed in the woods extending along the banks of the Feria towards its confluence with the Albuera; and Godinot was ordered to attack the village and bridge, and to bear strongly against the centre of the position, with a view to attract Beresford's attention, to separate his wings, and to double up his right at the moment when the principal attack should be developed.

"During the night Blake and Cole arrived with above sixteen thousand men; but so defective was the occupation of the ground, that Soult had no change to make in his plans from this circumstance, and, a little before nine o'clock in the morning, Godinot's division issued from the woods in one heavy column of attack, preceded by ten guns. He was flanked by the light cavalry, and followed by Werlé's division of reserve, and, making straight towards the bridge, commenced a sharp cannonade, attempting to force the passage; at the same time Briché, with two regiments of hussars, drew further down the river to observe Colonel Otway's horse.

"The allies' guns on the rising ground above the village answered the fire of the French, and ploughed through their columns, which were crowding without judgment towards the bridge, although the stream was passable above and below. But Beresford, observing that Werlé's division did not follow closely, was soon convinced that the principal effort would be on the right, and therefore sent Blake orders to form a part of the first and all the second line of the Spanish army on the broad part of the hills, at right angles to their actual front. Then drawing the Portuguese infantry of the left wing to the centre, he sent one brigade down to support Alten, and directed General Hamilton to hold the remainder in columns of battalions, ready to move to any part of the field. The thirteenth dragoons were posted near the edge of the river, above the bridge; and, meanwhile, the second division marched to support Blake. The horse artillery, the heavy dragoons, and the fourth division, also took ground to the right, and were posted; the cavalry and guns on a small plain behind the Aroya, and the fourth division in an oblique line about half musket shot behind them. This done, Beresford galloped to Blake, for that general had refused to change his front, and, with great heat, told Colonel Hardinge, the bearer of the order, that the real attack was at the village and bridge. Beresford had sent again to entreat that he would obey, but this message was as fruitless as the former; and, when the marshal arrived, nothing had been done. The enemy's columns were, however, now beginning to appear on the right, and Blake, yielding to this evidence, proceeded to make the evolution, yet with such pedantic slowness, that Beresford, impatient of his folly, took the direction in person.

"Great was the confusion and the delay thus occasioned, and ere the troops could be put in order the French were amongst them. For scarcely had Godinot engaged Alten's brigade, when Werlé, leaving only a battalion of grenadiers and some squadrons to watch the thirteenth dragoons and to connect the attacks, countermarched with the remainder of his division, and rapidly gained the rear of the fifth corps as it was mounting the hills on the right of the allies. At the same time the mass of light cavalry suddenly quitted Godinot's column, and crossing the river Albuera above the bridge, ascended the left bank at a gallop, and, sweeping round the rear of the fifth corps, joined Latour Maubourg, who was already in face of Lumley's squadrons. Thus half an hour had sufficed to render Beresford's position nearly desperate. Two thirds of the French were in a compact order of battle on a line perpendicular to his right, and his army, disordered and composed of different nations, was still in the difficult act of changing its front. It was in vain that he endeavoured to form the Spanish line sufficiently in advance to give room for the second division to support it; the French guns opened, their infantry threw out a heavy musketry, and their cavalry, outflanking the front and charging here and there, put the Spaniards in disorder at all points; in a short time the latter gave way, and Soult, thinking the whole army was yielding, pushed forward his columns,

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"At this critical moment General William Stewart arrived at the foot of the height with Colonel Colborne's brigade, which formed the head of the second division. The colonel, seeing the confusion above, desired to form in order of battle previous to mounting the ascent; but Stewart, whose boiling courage overlaid his judgment, led up without any delay in column of companies, and attempted to open out his line in succession as the battalions arrived at the summit. Being under a destructive fire, the foremost charged to gain room; but a heavy rain prevented any object from being distinctly seen, and four regiments of hussars and lancers, which had passed the right flank in the obscurity, came galloping in upon the rear of the line at the instant of its development, and slew or took two thirds of the brigade. One battalion only (the thirty-first) being still in column, escaped the storm and maintained its ground; while the French horsemen, riding violently over every thing else, penetrated to all parts. In the tumult a lancer fell upon Beresford, but the marshal, a man of great strength, putting his spear aside, cast him from his saddle; and a shift of wind blowing aside the mist and smoke, the mischief was perceived from the plains by General Lumley, who sent four squadrons out upon the lancers and cut many of them off.

"During this first unhappy effort of the second division, so great was the confusion, that the Spanish line continued to fire without cessation, although the British were before them; whereupon Beresford, finding his exhortations to advance fruitless, seized an ensign and bore him and his colours by main force to the front; yet the troops would not follow, and the man went back again on being released. In this crisis the weather, which had ruined Colborne's brigade, also prevented Soult from seeing the whole extent of the field of battle, and he still kept his heavy columns together. His cavalry, indeed, began to hem in that of the allies; but the fire of the horse artillery enabled Lumley, covered as he was by the bed of the Aroya, and supported by the fourth division, to check them on the plain, while Colborne still maintained the heights with the thirty-first regiment; the British artillery, under Major Dickson, was likewise coming fast into action, and William Stewart, who had escaped the charge of the lancers, was again mounting the hill with General Houghton's brigade, which he brought on with the same vehemence, but, instructed by his previous misfortune, in a juster order of battle. The weather now cleared, and a dreadful fire, poured into the thickest of the French columns, convinced Soult that the day was yet to be won.

"Houghton's regiments soon got footing on the summit, Dickson placed the artillery in line, the remaining brigade of the second division came up on the left, and two Spanish corps at last moved forward. The enemy's infantry then recoiled, yet soon recovering, renewed the fight with greater violence than before; the cannon on both sides discharged showers of grape at half range, and the peals of musketry were incessant and often within pistol shot; but the close formation of the French embarrassed their battle, and the British line would not yield them one inch of ground nor a moment of time to open their ranks. Their fighting was, however, fierce and dangerous. Stewart was twice hurt, Colonel Duckworth of the forty-eighth was slain, and the gallant Houghton, who had received many wounds without shrinking, fell and died in the act of cheering his men. Still the struggle continued with unabated fury. Colonel Inglis, twenty-two other officers, and more than four hundred men out of five hundred and seventy that had mounted the hill, fell in the fifty-seventh alone, and the other regiments were scarcely better off; not one

third were standing in any. Ammunition failed, and, as the English fire slackened, the enemy established a column in advance upon the right flank; the play of Dickson's artillery checked them a moment, but again the Polish lancers charging, captured six guns. And in this desperate crisis, Beresford, who had already withdrawn the thirteenth dragoons from the banks of the river, and brought Hamilton's Portuguese into a situation to cover a retrograde movement, wavered! destruction stared him in the face, his personal resources were exhausted, and the unhappy thought of a retreat rose in his agitated mind. Yet no order to that effect was given, and it was urged by some about him that the day might still be redeemed with the fourth division. While he hesitated, Colonel Hardinge boldly ordered General Cole to advance; and then riding to Colonel Abercrombie, who commanded the remaining brigade of the second division, directed him also to push forward into the fight. The die being thus cast, Beresford acquiesced, and this terrible battle was continued.

"The fourth division had only two brigades in the field; the one Portuguese under General Harvey; the other, commanded by Sir W. Myers, and composed of the seventh and twenty-third British regiments, was called the fusilier brigade. General Cole directed the Portuguese to move between Lumley's dragoons and the hill, where they were immediately charged by some of the French horsemen, but beat them off with great loss: meanwhile he led the fusiliers in person up the height.

"At this time six guns were in the enemy's possession, the whole of Werlé's reserves were coming forward to reinforce the front column of the French, and the remnant of Houghton's brigade could no longer maintain its ground; the field was heaped with carcasses, the lancers were riding furiously about the captured artillery on the upper part of the hill, and on the lower slopes a Spanish and an English regiment in mutual error were exchanging volleys; behind all, General Hamilton's Portuguese, in withdrawing from the heights above the bridge, appeared to be in retreat. The conduct of a few brave men soon changed this state of affairs. Colonel Robert Arbuthnot, pushing between the double fire of the mistaken troops, arrested that mischief; while Cole, with the fusiliers, flanked by a battalion of the Lusitanian legion under Colonel Hawkshawe, mounted the hill, dispersed the lancers, recovered the captured guns, and appeared on the right of Houghton's brigade exactly as Abercrombie passed it on the left.

"Such a gallant line, issuing from the midst of the smoke, and rapidly separating itself from the confused and broken multitude, startled the enemy's heavy masses, which were increasing and pressing onwards as to an assured victory; they wavered, hesitated, and then vomiting forth a storm of fire, hastily endeavoured to enlarge their front, while a fearful discharge of grape from all their artillery whistled through the British ranks. Myers was killed; Cole, and the three colonels, Ellis, Blakeney, and Hawkshawe, fell wounded; and the fusilier battalions, struck by the iron tempest, reeled and staggered like sinking ships. Suddenly and sternly recovering, they closed on their terrible enemies; and then was seen with what a strength and majesty the British soldier fights. In vain did Soult, by voice and gesture, animate his Frenchmen; in vain did the hardiest veterans, extricating themselves from the crowded columns, sacrifice their lives to gain time for the mass to open out on such a fair field; in vain did the mass itself bear up, and fiercely striving, fire indiscriminately upon friends and foes, while the horsemen hovering on the flank threatened to charge the advancing line. Nothing could stop that astonishing infantry. No sudden burst of

Regency. undisciplined valour, no nervous enthusiasm, weakened the stability of their order; their flashing eyes were bent on the dark columns in their front; their measured tread shook the ground; their dreadful volleys swept away the head of every formation; their deafening shouts overpowered the dissonant cries that broke from all parts of the tumultuous crowd, as foot by foot and with a horrid carnage it was driven by the incessant vigour of the attack to the farthest edge of the hill. In vain did the French reserves, joining with the struggling multitude, endeavour to sustain the fight; their efforts only increased the irremediable confusion, and the mighty mass giving way like a loosened cliff, went headlong down the ascent. The rain flowed after in streams discoloured with blood, and fifteen hundred unwounded men, the remnant of six thousand unconquerable British soldiers, stood triumphant on the fatal hill!"

Lord Wellington reached the army some time after the battle of Albuera, and determined to renew the siege of Badajos. Breaches were made in the walls, and two attempts at assault were hazarded (6th and 9th June), but in vain; the advance of the French army from the north, in concert with that of the south, necessitated the raising of the siege. Here ended the active operations of the year. Our army remained some time encamped in the central part of Portugal, after which Lord Wellington marched northward and threatened Ciudad Rodrigo, but retreated before a superior force collected by the French.

CHAP. XIX.

THE REGENCY.—WAR WITH FRANCE.

The Regency.—Campaign of 1812.—Battle of Salamanca.—Consequences of this victory.—Session of 1812.—Overtures to the Opposition.—Orders in Council.—Session of 1812–1813.—Princess of Wales.—East India Charter.—Campaign of 1813.—Operations in the east of Spain.—Failure of the attempt on Tarragona.—Operations in the West.—Battle of Vittoria.—Siege of San Sebastian.—Battles of the Pyrenees.—Invasion of France.—Battles of the Nive, Nivelle, Orthès, and Toulouse.—Session of 1813–1814.—General Pacification and Settlement of Europe.—Origin of our differences with the United States of America.—Suspension of Neutral Trade.—War declared 18th June 1812.—Naval Operations.—Operations in Canada.—American Campaign of 1813.—Affair at Sackett's Harbour.—Campaign of 1814.—Operations on the Lakes.—Operations in the central parts of the United States.—Attack on New Orleans.—Peace.—Ruinous effects of the war.—Session of 1814–1815.—Corn Laws.—Return of Bonaparte from Elba.—Effects of this extraordinary attempt.—Military Operations.—Campaign in the Netherlands.—Battle of Quatre Bras.—Battle of Ligny.—Battle of Waterloo, and Overthrow of Napoleon.—Advance of the Allies, and Second Treaty of Paris.—Reflections on the War.—Session of 1816.—Loss of the Property-Tax Bill.—Battle of Algiers.—Session of 1817.—Suspension of Habeas Corpus.

The session of 1810–11 opened in November 1810, more early than was intended, in consequence of the mental indisposition of the king. Repeated adjournments, however, took place in the vain hope of a recovery, and it was not till the 20th of December that resolutions for a regency were moved in both houses. They formed the chief subject of discussion during the ensuing month. Their principal characteristics consisted in the restrictions imposed on the prince for the succeeding year, during which he was not permitted to confer the rank of peer, to grant an office in reversion, or even a place or pension, except during the king's pleasure; whilst the management of the royal household was vested in the queen. Resolutions so obnoxious to the prince called forth a strong opposition; and a motion that the royal power should be conferred on

him without restriction was supported by two hundred against two hundred and twenty-four. But the divisions in favour of ministers became stronger after the question of the regency was settled, and great part of the session passed without any contest between government and the opposition, the latter considering the present arrangement as temporary; an opinion in which they were confirmed by the language of the regent, who entered on his functions by declaring, that he continued ministers in office solely from a feeling of filial respect. Among the successive topics of discussion were the county meetings of the Catholics in Ireland, and the steps taken by government to repress them; an act to authorize government to send English militia into Ireland, and Irish militia into England; and finally, the re-appointment of the Duke of York to his office of commander-in-chief; a step which excited some surprise, but received the decided support of parliament, a motion made to censure it being negatived by two hundred and forty-nine to forty-seven. But the most anxious topics of parliamentary and public attention were the distress of trade and the state of our paper currency. Towards the relief of the former, an issue of exchequer bills was authorized under certain limitations; and to support the credit of the latter, a law was passed which, when joined to former enactments, had nearly the effect of making bank-notes a legal tender.

The campaign of 1812 commenced very early, Lord Wellington investing Ciudad Rodrigo on the 8th of January. The siege was pressed with activity, and a breach being made, the town was carried by storm on the 19th of January, though with a great loss, particularly in officers, among whom was General Mackinnon. So prompt had been our operations, that the French army approaching to the relief of the place would not at first believe the news of its capture. Soon afterwards Lord Wellington turned his forces to the south, and invested Badajos, already the scene of such obstinate contests. Here, also, the operations were pressed with great rapidity, that they might be brought to an issue before the arrival of the French army from Cadiz. On the night of the 6th April, Badajos was attacked on several points by escalade; but we were repulsed in every direction except at the castle, which was fortunately carried; and as it commanded all the works, the consequence was the surrender of the town next day, after a siege which, short as it had been, cost us very nearly five thousand men. Secure on the south, Lord Wellington now marched towards the north, and detached Sir Rowland Hill to make a sudden attack on the French station at Almaraz, where the bridge over the Tagus served as the chief military communication between the northern and southern army. The expedition was successful, the entrenchments being stormed and destroyed. Lord Wellington now marched against the French army in the north, commanded by Marmont, and reached Salamanca on the 16th of June. The forts in that town being taken after some sharp fighting, the French retreated to the Douro: but being soon reinforced, resumed the offensive, and obliged our army to retreat in its turn. These movements continued several weeks, Lord Wellington being obliged to yield ground to his opponent, but ready to attack him on the commission of any material fault. Such an opportunity at last occurred on 22d July, near Salamanca, when the French, rendered confident by our continued retreat, extended their left, and presented an opening, which was instantly seized by their vigilant adversary. Columns were sent forward against the enemy's left and centre; the former succeeded completely, the latter met with much opposition. Great gallantry was shown, and heavy loss sustained on both sides. At last the French centre and right were both driven from the field. The darkness prevented our making prisoners, but a body of cavalry join-

ing in the night, the hostile rear-guard was attacked next morning, and obliged to surrender. Our loss was about three thousand British and two thousand Portuguese; that of the enemy in killed and wounded was at least equal, and we took between six and seven thousand prisoners. The British force in the field was twenty-two thousand.

The consequences of the victory of Salamanca were the pursuit of the French army; the occupation of Madrid on the 12th of August by the allies; the abandonment by the French of the works constructed at vast expense against Cadiz; the evacuation of Andalusia, Grenada, and all the south of Spain. But as this loss of territory was not attended by a loss of troops, it became incumbent on Lord Wellington to prepare against a vigorous attack from forces that were rapidly concentrating. He made repeated attempts to take the castle of Burgos, and the military stores collected there; but this fort, defended by a strong garrison and a vigilant commander, General Dubreton, baffled all our efforts, and proved the cause of a considerable sacrifice of lives. Meantime the approach of Soult from the south, and of the army that had fought at Salamanca from the east, obliged Lord Wellington to adopt the alternative of retreat. He began his march on the 20th of October, and proceeded westward, in a line nearly parallel to the Douro, taking above three weeks to recross the country to the scene of his victory at Salamanca. There, united with General Hill, and at the head of fifty thousand men, he remained on ground lately so propitious, hoping that an opportunity might offer to attack the enemy, though now increased, by the junction of their two armies, to the number of seventy thousand. But Soult's positions were found too strong for attack, and the interval afforded him by Lord Wellington was diligently employed in pushing forward detachments to cut off our communications with Portugal. Retreat now became indispensable; and here, amidst hasty marches, and a scarcity of five days, there occurred scenes of insubordination which recalled all the disorders of our march to Corunna, and drew from Lord Wellington a most severe censure in general orders. Fortunately, similar privations on the side of the French prevented them from making many prisoners, and, on 20th November, on the frontier of Portugal, was closed this eventful campaign.

The session opened on the 7th of January, and the early discussions related to arrangements for the royal household, and to a motion by Mr Brougham to exclude the droits of admiralty from the civil list. In this he was unsuccessful; and a similar fate attended a motion by Lord Morpeth, for an inquiry into the state of Ireland, with a view to admitting Catholics to the enjoyment of political rights. The next measures of general interest were two acts against *frame-breaking*; a practice which the Nottingham workmen, pressed by the loss of the American market, and the consequent fall of wages, had carried to an alarming length. The public attention was soon after engaged by ministerial changes. Marquis Wellesley finding himself unable to lead the cabinet, or to prevail on his colleagues to extend the scale of our operations in Spain, resigned in February the secretaryship of foreign affairs, and was succeeded by Lord Castlereagh. The restrictions on the power of the regent now drawing to a close, consistency required an overture for the admission into office of the leaders of the opposition, intimate as they had been in former years with his royal highness. This prompted the well-known letter of the 13th February from the prince to the Duke of York, professing a wish to unite with the present ministers "some of those persons with whom the early habits of his public life had been formed." The answer of Lords Grey and Grenville explained their reasons for declining a union with an administration differing so much from them in the most important points of national policy,

namely, the claims of the Irish Catholics, the orders in council, and the over-issue of bank paper. With this explanation the correspondence closed, and the ministry proceeded unchanged until the assassination of Mr Perceval, when Lord Liverpool succeeded to the first station, and was directed by the prince to make an overture to Marquis Wellesley and Mr Canning. This led to nothing; and a motion made in the House of Commons to address the regent, praying him to appoint an efficient administration, was carried by a hundred and seventy-four against a hundred and seventy. This most unexpected vote necessitated a second overture to the opposition, the management of which was committed, first to the Marquis of Wellesley, and afterwards to Lord Moira. It now seemed highly probable that the opposition would come in; yet the negotiation entirely failed, in consequence partly of existing animosities, partly of the stiffness of Lord Grey, partly, perhaps, of a secret reluctance in the court to admit the opposition. Lords Liverpool and Castlereagh remained in office with all the benefit of a declared readiness on their part, and of an apparent unreasonableness in the demands of opposition.

The most urgent question now before parliament was the continuation or repeal of the orders in council. The distress of the manufacturers had become general, and had led, among the lower orders, to commotion and riot; among the higher, to petitions to parliament complaining of our pertinacious adherence to these orders as the cause of the loss of the great market of the United States. An inquiry was instituted on the motion of Mr Brougham. It was conducted by him with astonishing knowledge and talent during several weeks, and every step in its progress gave the evidence a more serious aspect. Still there was a prevailing disposition to cling to those measures, when the accession of Lord Liverpool to the leading station in the cabinet produced their repeal, though unfortunately too late to prevent the American war.

Though parliament had sat during five years only, the victory of Salamanca and our other successes in Spain afforded ministry a favourable opportunity for appealing to the people. A dissolution was proclaimed on the 29th of September; and on the 30th of November the new parliament was opened by the regent in person, who spoke for the first time from the throne. Our partial reverses in the close of the campaign in Spain, and the murmurs of Marquis Wellesley and Mr Canning at the inadequacy of our financial contributions to the peninsular contest, were silenced by the cheering intelligence from Russia, from which Bonaparte was now retreating with tremendous loss. In the progress of the session the attention of the house and of the public was strongly excited by an appeal from the Princess of Wales to parliament, demanding an investigation of her conduct. This led to a motion for a copy of the report delivered by the noblemen charged with the inquiry of 1806; and this motion being negatived, the result was the publication in the newspapers of a succession of papers relating the whole transaction. These papers, however indicative of want of discretion on the part of her royal highness, produced, on the whole, an impression in her favour, as unjustly attacked in her honour. The most interesting debates of the session related to the Catholic question, and the renewal, with important changes, of the charter of the East India Company. The new charter, granted for twenty years from 1814, reserved to the Company the exclusive trade to China, but laid open to the public, with slight qualifications, the trade to all other parts of the East. Among the minor proceedings of the session were an act for lessening the endless delays of chancery, by appointing a vice-chancellor; and an act, which, if it did not enforce clerical residence, held out a strong inducement to it, by obliging incumbents to increase

Regency. the stipends of their curates. After granting ministers a liberal vote of credit, parliament was prorogued on the 22d of July, amidst a general hope of favourable intelligence from the Continent; Spain being nearly delivered from the invaders, and the Germans having risen with ardour to assert their independence.

The campaign of 1813 opened in the east of Spain, by an attack on the allied army under Sir John Murray, stationed not far from Alicant. The ground it occupied was strong, but the length of the position, two miles and a half, made Suchet, who commanded the French, conceive the hope of penetrating it at one point or another. In this, however, he was foiled with a loss of from two to three thousand men; this being the only check of importance received by that commander in all his campaigns in Spain. Soon after this success, our army was engaged in the bold plan of proceeding by sea to Catalonia, and besieging Tarragona. The wind proved favourable; the main body was landed near Tarragona; and a detachment succeeded, by great exertion, in taking Fort St Philip on the mountain called the Col de Balaguer, which blocked the nearest road for the arrival of the French from the south. Suchet, however, lost no time in marching northwards; and our general, Sir John Murray, considered his force, which was chiefly Spanish, as unable to withstand the French. He therefore embarked and returned to Alicant, a measure which incurred censure, but appears fully justified by circumstances, and still more by the conduct of his successors in the command.

Suchet, though successful on this occasion, soon found himself unable to retain his extensive line of occupation. The battle of Vittoria brought a new enemy on his rear, and obliged him to withdraw, first from Valencia, and subsequently as far as Barcelona. Our army now advanced by land, and resumed the siege of Tarragona, with the power of retreating, not, as before, by sea, but on the country behind; an alternative to which a second advance by Suchet soon compelled our new commander, Lord William Bentinck. The French, however, unable to occupy an extended position, blew up the works of Tarragona and retired. Our army advanced anew, but was again checked and obliged to draw back, exhibiting a striking proof of the impracticability of opposing an active enemy with a mixed force, of which the Spaniards formed a large proportion.

We now turn to the western part of the peninsula, the field of the commander-in-chief, and of the far larger portion of our force. Lord Wellington, averse to open the campaign till every part of his troops was ready to co-operate with efficiency, did not move from quarters till after the middle of May. He knew that he would have much ground to traverse, retreat being evidently the policy of the French, weakened as they were by the recall of twenty-five thousand veterans, who had been feebly replaced by a body of conscripts. Lord Wellington was now, for the first time, at the head of a superior force, which he wielded with consummate skill. The strength of the enemy lay in the line of the Douro, which they expected to defend with advantage, so far at least as to make us purchase dearly its acquisition; but all this was prevented by Lord Wellington making his left division cross the river on the Portuguese territory, and advance along its northern bank; whilst he and Sir Rowland Hill, at the head of separate corps, marched, after several feints, in a diagonal direction, so as to support this movement, and effect a junction in an advanced position. The French, threatened with being taken in the rear, evacuated one town after another, and, even at Burgos, declined to fight on ground where late recollections would have been so animating; they continued to retreat, increasing from time to time their numbers by

the garrisons of the evacuated towns, until at last they took a position at Vittoria, a town in Biscay, near the north-east frontier of Spain.

The position of the French extended from north to south, and was of great length. Their left rested on heights; part of their centre also occupied heights, and their right was near the town of Vittoria. The Zadorra, a stream of considerable size, but crossed by several bridges, ran nearly parallel to their front. Both armies were numerous, particularly that of the allies. It was the first time that nearly forty thousand British had fought together in Spain. Lord Wellington acted on the offensive throughout, and began active operations by taking possession of the heights near the extreme left of the enemy. This was easily effected; but their importance being soon perceived by the French, a strong effort was made to recover them; and an obstinate contest took place, but the British on the heights repelled every assault. Under cover of these heights our right wing advanced and took a village (Sabijana) in front of the enemy's centre. It was in vain that the French attempted to retake this village. The centre of the allies crossed the river near it, and the centre of the French withdrew from their position, retreating to the town of Vittoria. At first this retreat was effected in good order; but an alarming account soon reached the French from their right. That part of their position had been defended by the river and two *têtes-de-pont*; but the troops of our left wing had taken, first the heights commanding these forts, and soon after the forts themselves, baffling every effort of the enemy to retake them. The great road leading to the north was thus in possession of the allies; hence general alarm and confusion spread throughout the French army. Their reserve was hastily withdrawn from its position, and pressed, with the whole army, along the only remaining road to the eastward; abandoning all their artillery, their ammunition, and their baggage. The loss of the battle was imputed by the French to Jourdan, whom Bonaparte, in a luckless hour, had allowed his brother to substitute for Soult, and who here, as at Talavera, was too late in discovering the importance of commanding positions. The loss in men was not particularly severe; that of the allies in killed and wounded was under four thousand, and that of the French probably not much greater. The temptation afforded by the plunder of the baggage prevented our troops from making many prisoners; but the spirit of the enemy was shaken, and the loss of their artillery and stores obliged them to retreat across the Pyrenees.

The next operation of consequence consisted in the siege of San Sebastian, a frontier fortress of great importance, which the French made the most vigorous efforts to relieve. Their army, provided anew with ammunition and cannon, advanced under the command of Marshal Soult, and, after some sharp actions, drove back the British corps posted in the passes of the Pyrenees. Our troops retreated to the vicinity of Pamplona, where, on the 27th, and still more on the 28th, they sustained a succession of impetuous attacks from the enemy. On the 29th Lord Wellington resumed the offensive, drove the French from their position, strong as it was, and obliged them to retrace their steps through the Pyrenees. Our loss in these actions was about six thousand men in killed and wounded; that of the enemy was still greater, exclusive of about four thousand prisoners.

At San Sebastian we had been repulsed in an assault on the 25th of July; the siege was continued, and a final assault, on the 31st of August, led to the capture of the place, though with the loss of two thousand five hundred men. The further operations were, the entrance of our army on the French territory on 7th October, the capitulation of Pamplona on the 26th, and a general attack on the position

ency. of the French near St Jean de Luz on 10th November, after which they retreated across the Nivelle. But this mountainous country afforded a number of positions, and our next task was to drive the enemy from behind the Nive, a large river flowing northward from the Pyrenees. This was partly accomplished on the 9th of December; but on several succeeding days the French, commanded by Soult, made impetuous attacks on the allied army, all anticipated by Lord Wellington, and all repulsed with heavy loss. Still the rains of the season, and the size of the mountain streams, retarded our operations. In January 1814 our army made some further progress, and, on the 25th of February, attacked the French in a position near Orthès, behind the Gave de Pau, another large river flowing from the Pyrenees. This attack was successful; and the retreat of the French was followed by the desertion of a number of their new levies. Soult's army now drew back, not in a northerly, but easterly direction, to join detachments from the army of Suchet in Catalonia. At Tarbes, on the 20th of March, the fighting was of short duration; but a sanguinary battle took place at Toulouse on the 10th of April; a battle attended with a loss to the allies of nearly five thousand men, which, as well as a great sacrifice of lives on the part of the French, might have been prevented had earlier intelligence arrived of the overthrow of Bonaparte, and the change of government at Paris.

The causes of this great change will be fully explained under another head. They are but partly to be found in the operations above described; for although the Spanish war had proved extremely injurious both to the finances and military establishment of Bonaparte, his power was so great, that nothing could have shaken it but a vast and sudden catastrophe. From the moment that he lost his armies in Russia, there existed substantial grounds for hope; and after the accession of Austria to the coalition, there was little reason to doubt his overthrow. The resources of France continued indeed unreservedly at his disposal; and the dread of a counter-revolution gave him the support of the majority of a nation long disgusted with his domineering spirit and never-ending wars. But the preponderance of military means was irresistible; in vain did he struggle against it in Saxony in 1813, and in Champagne in 1814. His partial successes served only to excite a temporary illusion; and the occupation of Paris by the allies proved, like its possession by successive parties in the revolution, decisive of the fate of France.

The cheering expectations with which parliament separated were happily realized in the course of the autumn; and parliament re-assembled on the 4th of November with the knowledge that the victory at Leipsic had secured the independence of Germany, and enabled our allies to shake the throne of the usurper. There was but one opinion, that at such a juncture every exertion, whether financial or military, should be made to complete the deliverance of the Continent. All the propositions of ministers were adopted; and on the 17th of November parliament adjourned to the 1st of March, evidently in the hope that before that period the advance of the allied arms into France would lead to a general pacification. This result, justified by sound calculation, was delayed by the precipitancy of the Prussians, and the consequent checks received by them and their allies; so that parliament, when it met on the 1st of March, adjourned to the 21st; and, on their assembling at that date, Lord Castlereagh being still absent on the Continent, the business transacted during several weeks was of inferior interest. Next came the discussions on the corn trade, the budget of the year, and an additional measure for the preservation of tranquillity in Ireland. A general pacification had by this time taken place; and the arrangements of ministers afforded little opening for animad-

version, except as to the compulsory transfer of Norway from Denmark to Sweden. That question was warmly debated in both houses; and a motion relative to it, made in the House of Lords by Earl Grey in a speech of uncommon eloquence, received the support of eighty-one votes against a hundred and fifteen. The further proceedings of the session were an address, praying the regent to interest himself with foreign powers for a prompt and general abolition of the slave-trade; a vote of L.400,000, in addition to the L.100,000 of the preceding year, to the Duke of Wellington; and grants, but on a far smaller scale, to Generals Graham, Hill, and Beresford, who were now raised to the peerage. On the Princess of Wales a settlement of L.35,000 was definitively made.

We have now arrived at the period when, after a contest which, as far as regards England and France, may be termed a war of twenty years, Europe was restored to a condition which promised long-continued peace. The principal provisions of the treaty of Paris in 1814, and the congress of Vienna in 1815, were as follow:—

France was circumscribed within her former territory, with the addition of part of Savoy, which, however, was relinquished in 1815 to the king of Sardinia.

Austria recovered Lombardy, and added to it Venice with its adjacent territory, possessing thus a population of twenty-nine millions, being very nearly equal to that of France, and considerably greater than that which she possessed in 1792.

Germany was declared a great federal body, as before the French revolution, with the distinction that a number of petty districts and principalities were incorporated into the larger, such as Bavaria, Wirtemberg, Hesse-Cassel, and Hesse-Darmstadt; and with the further distinction, that there is now no imperial head, but an understood division of influence between the two great powers, Austria being the protectrix of the south, and Prussia of the north. These are progressive advances towards consolidation; and to them may be added the formation of a diet, still devoid of unity and slow in deliberation, but not altogether so tardy or disunited as its predecessors at Ratisbon.

Russia has during the present age suffered no reduction of her territory, but has proceeded in a regular course of acquisition. Her power, though less colossal than is vulgarly supposed, has received a substantial addition by the acquisition of Finland and of the greater part of Poland. Two thirds of what once was Prussian Poland, and a part of Galicia, were formed in 1815 into a kingdom, which, however, has recently been overthrown.

Prussia, on the other hand, has exhibited a striking example of the mutability of political greatness. Raised by the talents of Frederick II. to a rank above her real strength, but making after his death successive additions to her territory by the dread of her arms, and by diplomatic combinations, she saw the whole fabric overturned by Bonaparte in one fatal campaign. From 1807 to 1813 her dominions continued circumscribed, and her population hardly exceeded six millions. But the arrangements of 1814 restored to her a third of Russian Poland, and a valuable tract of country on the Lower Rhine; and her population is now above ten millions.

Of her colonial conquests from France, England retained Tobago, St Lucie, and the Isle of France. The peace confirmed also our possession of Malta and the Cape. Of the other Dutch settlements, Surinam and Java were restored; but Demerara, Berbice, and Essequibo, containing a number of British settlers, were retained; the merchants of Holland, however, enjoying certain privileges of trade with these colonies. On the continent of Europe we effected a long-desired, though (as the event has shown) insecure measure, the union of the seven Dutch and ten

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Belgic provinces into one kingdom. The latter, in their detached state, presented too tempting an object for France, and would have proved the cause of repeated wars, in which England, from her interest in the independence of Holland, and her dread of invasion, could hardly fail to participate.

The losses of Denmark rank among the most painful consequences of the wars of the French revolution. To strip that pacific and inoffensive kingdom, first of its navy, and next of a kindred country, governed by the same sovereign during four hundred years, were acts that called forth the regret and condemnation of every unprejudiced observer. The transfer of Norway was opposed by the inhabitants; and we add with regret, that our navy was ordered to take part against them by blockading their ports. At last the affair was terminated by a convention pronouncing the union of Sweden and Norway under the same sovereign, but reserving to the latter her separate constitution. Pomerania was transferred from Sweden to Prussia, and Denmark received a small territory to the south of Holstein.

Sweden had enjoyed during many years the advantage of neutrality, and, like Denmark, increased gradually her shipping and trade. Deviating from this in 1805, and becoming a party to the coalition against France, she was saved from hostilities by the rapid overthrow of Austria; and Pomerania was not attacked until 1807, when Gustavus IV. chose to refuse peace at the time when he had not the support of a single continental ally. This and other acts of madness led to his deposition in 1809; and the year after, Europe saw with surprise the nomination of Bernadotte as the efficient head of the Swedish government. This choice, attributed at first to the interference of Bonaparte, was due, it seems, to the personal exertions of Bernadotte himself. The acquisition of Norway, and the introduction into Sweden of various improvements by an active-minded foreigner, are advantages of magnitude, and calculated to form some counterpoise to the loss of Finland and the increased danger from Russia.

Spain and Portugal preserved their territory unaltered; both had received rude shocks from the invader, but in both the reign of superstition and indolence seemed so firmly fixed as to bid defiance to political change, whether introduced by mild or by harsh means. The events of 1820, however, have shown, that in Spain there exists that sense of the abusive nature of their institutions, and that desire of reform, which in France produced the revolution; while in Portugal, notwithstanding her degraded condition, results ultimately favourable may be expected from the natural course of events.

Switzerland, without being made a province of France, had been obliged to furnish a military contingent in the wars of Bonaparte. The arrangements of 1814 maintained her as a federal state, but with nineteen cantons instead of thirteen; an increase derived, not from extended territory, but from the independent form acquired by certain districts, such as the Pays de Vaud, incorporated formerly with the original cantons.

The king of Sardinia was restored to Piedmont, and his other continental possessions, with the addition of the territory of Genoa.

The country of all Europe most likely to profit by the occupancy of the French was Italy. The substitution of an efficient government for the feeble administrations of Naples and Rome, the diminution of superstition, the increase of industry, the extirpation of robbery on the high ways, and the new modelling of the military establishment, were all objects of the highest importance. To these was added a hope of blending all the states of the peninsula into a common union; a union most ardently desired by

the Italian nation, and calculated, above all things, to preserve their country from war and the intrusion of foreigners. The selfish policy of Bonaparte, whose object was merely to extract from every country the utmost possible supply of revenue and recruits, prevented the adoption of this grand measure, until the re-assumed sway of foreigners, in particular of the Austrians, removed it to an indefinite distance, and reinstated the territorial divisions of Italy on the footing of 1792, with the exception of the republics of Venice and Genoa.

The royal family of Naples remained in Sicily during 1814; but Murat was not recognised by the Bourbons, and dreaded, with reason, that the allies would deem their task incomplete if they did not restore the crown of Naples to the ancient family. He armed in self-defence, and no sooner did he hear of Bonaparte's entrance into Lyons, than he advanced against Lombardy, and called upon all the Italians to unite in the assertion of their national independence. But his troops were unable to cope with the Austrians; after some partial successes they were obliged to retreat; and finding, in some sharp actions on their own territory, the continued superiority of their opponents, the eventual result was, the dispersion of the Neapolitan army, and the surrender of their capital on the 22d of May. The royal family now returned from Palermo to Naples, and resumed their sovereignty. Murat then escaped to Toulon; but, after the second return of the Bourbons, he proceeded to Corsica, and conceived the wild project of landing in the Neapolitan territory at the head of a feeble detachment, in the hope of being joined, like Bonaparte on returning from Elba, by thousands of his ancient followers. He disembarked in Calabria, but was forthwith attacked by the inhabitants, taken, and shot by order of the royal family, who were thus left in undisturbed possession of the crown.

Turkey was no party to the treaty of 1814, but remained on the footing on which the treaty with Russia in 1812 had placed her. Stationary in an age of change, and inflexible in her adherence to traditionary usages, she saw the French revolution pass without sustaining any injury from it; or rather she was indebted to it for a relaxation in the shocks to which the European part of her empire is exposed from Austria and Russia. The peace of 1790 had been preserved uninterrupted by Austria; that of 1791 was infringed by Russia by only one war, viz. from 1807 to 1812. The temporary occupation of Egypt by the French, and the more permanent establishment of England in the Ionian Islands, have had no effect on the interior of the Turkish empire.

We must now proceed to record military operations conducted in a very different quarter, and involving considerations very distinct from those which animated the contest on the continent of Europe. The United States of America continued on friendly terms with us during several years after the beginning of the war of 1803. There existed discussions, and of rather a serious nature, between the two countries, particularly in regard to the practice of our naval officers of impressing American seamen on suspicion, or pretended suspicion, of their being British subjects; but these contests were happily confined to diplomatists. Meantime the navigation of the Americans was in a course of rapid extension; for their neutral flag enabled them to act as carriers to the continental belligerents, and, in particular, to convey to Europe the produce of the French and Spanish West Indies. The depression of our West India trade in 1805, though the unavoidable result of too great a growth of produce for a system of monopoly, was attributed to the successful rivalry of the Americans in the continental markets. Mr Pitt was assailed by our ship-owners, and prevailed on to take measures which obliged the Americans to forbear the direct passage

agency. across the Atlantic, and to give such cargoes a neutral character by carrying them in the first instance to their own ports. The Grenville ministry maintained what Mr Pitt had done, and went no farther; but they were succeeded by men actuated by different views. A parliamentary committee, appointed in June 1807 to inquire into the distress of our West India colonies, received evidence calculated to strengthen an impression already very general, that a total stop ought to be put to the conveyance of French or Spanish colonial produce in neutral bottoms. No sooner did the successful termination of the Copenhagen expedition give popularity to the system of vigour than we issued the orders in council of November 1807, the object of which, however disguised, was to put a stop to neutral traffic, except when carried on by license from our government; thus assuming the power of restricting or extending that traffic as we should find beneficial to our interest, or rather, as we should imagine to be beneficial, since, in questions of commerce, the real is frequently far different from the anticipated result.

In this explanation of these ill-understood orders, we exclude from the motives of ministers all participation in that jealousy of America which actuated so many of our countrymen. We consider them as acting from conviction, as seeking in this measure only a source of benefit to our commerce, and of annoyance to our enemies in Europe; yet, even with these qualifications, the orders in council have contributed more than any other measure in the present age to the distress which afterwards afflicted our country. Their first practical result was a suspension of the navigation of the Americans by a general embargo imposed by their own government; and this preliminary measure was in a few months succeeded by a non-intercourse act, which continued in operation above a year, during which our exports to America were greatly reduced, and our manufacturers distressed to a degree that ought to have served as a warning of the consequences of a further contest with our best customers. In 1809, in consequence of a temporary arrangement, the intercourse was resumed, and exports from England to America took place to a great amount. But the offensive part of our system was soon afterwards revived; the Americans were prevented from trading with France, Italy, or Holland, and the only conciliatory answer given by our government, was a promise to recall our orders in council whenever the Americans should obtain from Bonaparte the repeal of his Berlin and Milan decrees. This repeal was in some measure obtained in 1810, but nothing could wean our ministry from their predilection for what they accounted a grand political measure; and those who inspect the official communications of the two governments, will see with surprise the expedients devised, and the promises held out, to gain time and to delude the Americans, while, in fact, there never was an intention of recalling the obnoxious decrees. The Americans offered explicitly¹ to recall all hostile edicts "if we revoked our orders;" but this not being complied with, their ports were definitively shut against us, and our manufacturers reduced to great distress; a distress portrayed in colours unfortunately too impressive in the parliamentary papers on the orders in council, printed in the early part of 1812. But no change could be effected in our measures till the accession of Lord Liverpool to the first ministerial station, when a repeal took place, but unhappily too late, the Americans having declared war before this intelligence could reach them. From this time forward the impartial narrator finds it his duty to transfer the charge of aggression from England to America. We had

now a minister aware of the evil tendency of our orders in council, and prepared to make reasonable concessions to the Americans; whilst they, heated by the contest, and attributing the change to the dread of losing Canada, refused our offers of accommodation.

The naval conflicts in the first year of the war were of a nature greatly to surprise the public, accustomed as it was to our almost uninterrupted triumphs at sea. The *Guerrière* frigate was captured on 19th August 1812, by the *Constitution* American frigate; and the *Macedonian* on the 25th of October by another American frigate called the *United States*. If these losses could in any degree be attributed to the fault of our officers, no such charge could be brought in the case of Captain Lambert of the *Java*, a brave and intelligent commander, who, after a dreadful conflict, was obliged, on the 29th of December, to strike to the *Constitution*. In this, as in the preceding actions, the real cause of failure lay in the disproportion of strength; the *Guerrière* having only two hundred and sixty-three men, her antagonist four hundred and seventy-six; the *Macedonian* only three hundred, the *United States* four hundred and seventy-eight. Even the *Java*, though a large frigate, had only three hundred and sixty-seven men, her opponent four hundred and eighty. The inequality in weight of metal was still greater, each of these American frigates having been originally intended for a ship of the line. No sooner did the two nations meet on an equal footing, in the case of the *Chesapeake* and *Shannon*, June 1st 1813, than the superiority was found to rest with us.

The operations by land were offensive on the part of the Americans, and directed to the conquest of Canada, of which the frontier adjoins their northern states, extending in a long line from south-west to north-east. The boundary consists in a great measure of water, being formed partly by the immense lakes Erie and Ontario, partly by the course of the St Lawrence. On the south-west part of this frontier a body of two thousand three hundred Americans, regulars and militia, advanced in July 1812 from the small fort of Detroit. Their operations, at first successful, were soon checked by a British detachment; retreat became unavoidable, and our troops assuming the offensive in their turn, the result was the surrender, on the 16th of August, of the whole body of Americans and of the fort of Detroit. Not discouraged by this failure, another detachment of Americans assembled near Niagara; but, after a sharp action on the 13th of October, were obliged, like their countrymen, to surrender. A further attempt, on the part of the Americans, to force the Niagara frontier on the 28th November was likewise unsuccessful; whilst, in a different quarter, at a distance of nearly three hundred miles to the north-east, the advance of their main body to Champlain proved ineffectual, the preparations on our side necessitating their retreat. Lastly, a detachment advancing, in January 1813, in the hope of retaking Fort Detroit, were themselves attacked by a British division, and obliged to surrender.

These repeated failures were the result, not of a deficient activity or courage, but of impatience and insubordination, the restraint of discipline being ill suited to a nation that acknowledges no master. But, in the next campaign, the Americans took the field with augmented forces and an improved plan of action. A strong division crossing Lake Ontario, landed on the 27th April at York, the chief town of Upper Canada, and took it, with its stores and part of the garrison. A check was indeed given to them in a very different quarter, on the Miami, a river falling into Lake Erie; but next month a strong body of Americans pene-

¹ Letter from Mr Monro to Mr Foster, 26th July 1811.

Regency. trated the Niagara frontier; and an attempt made by the British on Sackett's harbour, a port in Lake Ontario, failed through the misconduct of the general. Still the progress of the American main body into Canada from the Niagara was obstructed, and checks experienced by them in a way that clearly demonstrated the inexperience of their troops. They forbore, therefore, to advance by land, and directed their efforts to a naval superiority. On Lake Erie, the more remote of the two from our Canada settlements, this superiority was acquired in September, after the capture of our petty squadron under Captain Barclay; and the consequence was our abandoning the more distant posts in Upper Canada. On Lake Ontario the naval contest was long maintained; and an attempt made, in November, by a strong division of Americans, to descend the St Lawrence in small craft, and to threaten Montreal, was rendered abortive by the activity of our troops. The campaign was then closed by our opponents without making any serious impression on Canada, though their force exceeded twenty thousand men. On our part, the campaign terminated by taking Fort Niagara by surprise, and repulsing, near the small town of Buffalo, a corps of two thousand men brought forward to check our advance. The town was burned in retaliation for a similar excess committed by the Americans.

The inclemency of an American winter suspended hostile operations for some months. The first exploit of consequence in next campaign took place on Lake Ontario, and consisted in an attack by a British division and squadron on Fort Oswego, which, with its stores, fell into our hands. In the beginning of July an American division, five thousand strong, crossed the Niagara, already so often traversed, and obliged the opposing force to retreat. But the opportune arrival from Bourdeaux of some regiments which had served in France soon enabled our troops to make a stand; and on the 25th of July there took place an action more obstinate, and better sustained on the part of the Americans, than any that had yet occurred in the war. They were finally repulsed, but the loss was heavy on both sides. Some time after, a sally made by the garrison of Fort Erie against a detachment of British entrenched in the vicinity, though at first successful, was eventually repulsed. But a very different result attended an offensive enterprise, on a large scale, attempted by us on the side of Lake Champlain. For this purpose our commander, Sir G. Prevost, assembled all his disposable force, amounting, with the reinforcements from Europe, to nearly fifteen thousand men, crossed the American frontier, and marched southward to attack Plattsburgh, a fortified town on Lake Champlain. The attack on the land side was combined with that of a flotilla, consisting of a frigate and several smaller vessels, which, coming within sight on the 11th of September, engaged an American flotilla of nearly equal force. Unfortunately our commanding officer was killed, and our flotilla captured; a check which, though in itself of no great moment, induced our general to make a sudden retreat. This retreat, in the face of so inferior an enemy, was altogether inexplicable, and excited general surprise and disappointment. With it closed the operations on the side of Canada, each party having entirely relinquished the idea of offensive war.

As long as there remained a hope of treating with the Americans, our government had avoided offensive operations, and kept the command of our fleet in that station in the hands of Sir John Borlase Warren, an officer who joined diplomatic to nautical habits. At last, however, it became necessary to replace him by one whose spirit of enterprise was more conformable to the impatient ardour of our navy. Admiral Cochrane arrived, and lost no time in concerting an attempt on the American capital, by sail-

ing up the Patuxent, destroying a flotilla in that river, and landing a military force under Major-General Ross, which attacked the American division posted to defend Washington, drove them from their ground, and entered the capital in the evening. Here private property was respected; but of the public buildings there were destroyed not only the arsenal, the dock-yard, and the war office, but the houses of the senate and representative body, the residence of the president, and the bridge across the Potomac. Our troops, being few in number, retreated soon after; and embarking anew, proceeded against Baltimore, where they landed, drove the defending force of the Americans from their position, and approached the town. But the entrance to the harbour being closed by a barrier of sunk vessels, co-operation on the part of the navy was impracticable, and our troops were re-embarked without any loss of consequence, except that of their commander General Ross. A better result had been obtained in an expedition against Alexandria, a trading town on the Potomac, whence a quantity of stores and shipping was brought away. Success also attended an expedition in a very different quarter, namely, in the river Penobscot, at the northern extremity of the United States, adjoining the British province of New Brunswick. Far different was the result of an expedition on a larger scale, directed against New Orleans. Our troops disembarked from the Mississippi, repelled an assault by the Americans, moved forward, and came within six miles of the town, where they found the enemy posted behind a canal, with a breast-work in front, and their right flanked by the Mississippi. After a fortnight passed in mutual preparations, a night attack was at last determined on; but, unexpected difficulties retarding it till day-light, the fire of the Americans from behind their breast-work was pointed with unerring aim, and proved extremely destructive. In the short space of twenty minutes, our three principal officers, and nearly two thousand privates, were killed or wounded; and though, on the opposite side of the river, our attack had been successful, it was determined to relinquish the expedition, and re-embark the troops. This distressing failure was poorly compensated by the capture of Fort Mobile, the last land operation of the war. At sea, our final exploit was the capture of the American frigate *President*, of fifty-four guns and four hundred and ninety men.

The peace was signed at Ghent, on the 24th of December 1814, and its terms afforded a curious exemplification of the futility of warlike struggles. The territorial possessions of both countries were, with a very trifling exception, left on the same footing as before the war; and not the slightest notice was taken of the questions which had most strongly excited the spirit of hostility on both sides,—neither of the impressment of seamen, a point so important to the Americans, nor of the limitation of the rights of neutral traffic, a topic so often urged among us.

The United States, in no respect a manufacturing country, purchased from us merchandise to an extent annually increasing, and which, in 1807, had reached the amount of L.12,000,000 sterling. Every addition to their capital, every year that they passed in peace and prosperity, increased their value to us in a commercial sense; while every blow given to their productive funds necessarily operated in diminution of their purchases and payments. But, far from acting on these impressions, the ministry of 1807 eagerly seized the opening given them by the violence of Bonaparte to assail the trade of America, and issued, in November, those orders which “prohibited all direct intercourse from a neutral port to France, or her tributary states, unless the neutral vessels intended for such voyages touched first at a port in the British dominions, and paid a duty.” This singular measure was vindicated, not as legal

in itself, but as a trespass on neutral rights justified by the previous trespasses of the French government. It would, it was argued, distress that part of the Continent subject to Bonaparte, and excite discontent against his government; but the real motive was to cramp and control the trade of neutrals. That the Americans would not submit to such humiliating conditions, our government was well aware; but it knew also that they had neither army nor navy, and would not, at least for several years, resort to the alternative of war. So far our calculation was correct; but the question of national advantage we entirely misconceived. For what was the practical operation of these restrictive edicts? The trade of the Americans with the Continent was suspended, and the remittances formerly made to us from the sale of their goods—remittances not overrated at four or five millions a year—were made no more. Our bank paper fell, more from that than from any other cause, into a discredit which occasioned a loss of twenty, thirty, and eventually nearly forty per cent. on all subsidies and other government expenditure on the Continent. The mercantile insolvencies in America which followed the orders in council recoiled, in a great degree, on England, whose exporting merchants were the chief creditors of the bankrupts. Next came the burdens and the havoc of war; and of every million of American capital thus diverted from productive industry, the half at least was lost to the British manufacturer. But this was not all; the suspended intercourse, and the subsequent appeal to arms, induced the Americans to attempt to manufacture for themselves. This for several years excluded our goods; and when, upon the return of peace, British merchandise was poured into the United States, at prices so low as to defy competition, the consequence, particularly in the year 1819, was a scene of general insolvency in the States, which once more recoiled with the most distressing effects on the British creditor. All this was the result of a policy bad in every point of view, and which neither had nor could have any decisive influence on the grand contest in Europe.

We now return from this necessary digression to the ordinary course of our narrative. Parliament assembled on the 18th November, and, after the transaction of some business, relative chiefly to keeping the English militia embodied, and preserving the peace of Ireland, adjourned on the 2d December. They met again on the 9th February, and were soon after called on to discuss a most important department of home policy, namely, the corn laws. The prospect of the return of peace, and of large imports of corn from the Continent, had early excited the attention of the landed interest; and a committee, appointed in the spring of 1813, had made a report to parliament recommending the prohibition of foreign corn, except when wheat at home should be at or above the very high price of a hundred and five shillings the quarter. No proceedings on the subject took place that session, and next year the sense of the public was so unequivocally declared against this extravagant proposition, that a great reduction was indispensable; and, on bringing forward the resolutions connected with the subject, it was proposed to allow the importation of foreign wheat whenever our own should be at or above eighty-seven shillings. Still this limit appeared too high; the debates were warm; the petitions against the bill numerous; and, ministers suspending their support, the main part of the question was in consequence adjourned to next year. In the summer and autumn corn underwent a great fall, and the farmers experienced much distress; the consequence of which, and of the evidence given before the parliamentary committees, was, that government determined to support a corn bill on a reduced scale, foreign wheat being rendered in-

admissible when our own should be at or below eighty shillings. Resolutions to that effect were moved on the 17th February, and a bill founded on them was soon afterwards brought in. It still experienced opposition, particularly from Mr Baring and others, who argued that the limitation price ought not to be permanent, but subject to a graduated abatement during a series of years, till at last the corn trade should arrive at that unrestrained state so essential to commerce at large. But notwithstanding these arguments, and a tumultuous opposition without doors, the bill was carried by large majorities in both houses of parliament.

But from discussions of internal policy, the attention of parliament was suddenly directed to a more urgent topic; we mean the return of Bonaparte from Elba, and a notice of an immediate augmentation of our forces. An address to the regent, in support of this augmentation, was carried by great majorities; and a subsequent motion by Mr Whitbread, to prevent our interference for the reinstatement of the Bourbons, was lost by two hundred and seventy-three against seventy-two. Finally, the addresses in approbation of the treaties with the continental powers were supported by Lord Grenville, Mr Grattan, and other oppositionists; the numbers in the Lords being a hundred and fifty-six against forty-four; and in the Commons, three hundred and thirty-one against ninety-two. The further proceedings were an approval of the treaty of peace with America, and of the very questionable transfer of Genoa to the king of Sardinia. The session was concluded by a repeal of the law for fixing the price of bread in London by assize.

The ratification of the peace with America had not been received from the other shore of the Atlantic, when Bonaparte returned from Elba and raised in Europe a fresh alarm of war. He ventured to land with a force barely sufficient to secure his personal safety in a march, and to supply emissaries for mixing with the opposite ranks. The French soldiers are fond of glory, and their attachment revived at the sight of their leader. They first refused to oppose, and soon after pressed forward to join him; and he proceeded in a rapid and unresisted march to the capital. Ought England to participate in the coalition formed to expel this intruder, and to reinstate the Bourbons? On this question there existed, either in parliament or the public, very little difference of opinion; so great was the enmity inspired by Bonaparte, and such the dread of incessant war under his sway. Our ministry soon took their determination; our continental allies were unanimous in the cause; and not a day was lost in preparing for the invasion of France. The Netherlands, it was evident, would be the first scene of operations. Thither the Prussians pressed with all the ardour inspired by recent wrongs and a present desire of vengeance; thither were conveyed from England troops, ammunition, and stores, with all the dispatch afforded by the undisputed command of the sea. By the end of May or beginning of June the Prussian and British force in the Netherlands was superior to any that could be mustered by Bonaparte. It was not till the second week of June that his disposable force, to the number of a hundred and fifteen thousand men, was collected in front of the allied line. This was effected with great secrecy and dispatch. He joined the camp on the 14th, and caused his troops to march early on the 15th, driving in successively the Prussian outposts at Charleroi and Fleurus. From the point whence he marched to Ligny, the Prussian head-quarters, the distance was thirty miles; to Brussels, the head-quarters of Lord Wellington, was nearly twice as far; and all Bonaparte's hope rested on fighting his opponents separate and unsupported. Intelligence of the first movements of the French reached Lord Wel-

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lington in the afternoon of the 15th, and made him forthwith prepare for the march, which, however, he delayed until the arrival of a second courier from the Prussians, and of advices from his own outposts, which should show whether there was any serious attack on other points. In the evening accounts arrived which left no doubt that the mass of the French army was directed against the Prussians; and orders to march were in consequence issued in all directions, so as to reach even remote stations between three and four in the morning. Our troops began their march from almost every point at day-light, all moving on to Quatre Bras, a spot where four roads meet, and distant seven miles from Ligny. After marching between six and seven hours, several of the divisions stopped to take rest and refreshment; but they were hurried from their unfinished meal by dragoons dispatched to accelerate their advance, for Lord Wellington had by the way received intelligence of the rapid approach of the French. Proceeding promptly with his escort, he had time to reach the head-quarters of the Prussians, and to learn from their impatient commander, that, without knowing the numbers of the French, or their plan of attack, he was determined to accept battle on that day, and upon the ground which he then occupied. Lord Wellington had no controlling power. All he could do was to lessen the pressure on his allies, by pushing, as much as possible, such part of the French as might be opposed to the British. This interview took place between one and two o'clock; and his lordship, returning forthwith to Quatre Bras, found the French tirailleurs already in possession of the wood which skirted and commanded the road. Immediate orders were given to drive them out, a task which devolved on the highlanders arriving from Brussels, and the guards from Enghein, each after a march of twenty-five miles. They succeeded in expelling the French; but the want of artillery and cavalry, neither of which came up till late at night, prevented them from pushing forward with effect. Fresh bodies of the French were now seen advancing; and, on the other hand, regiments of British successively reached the ground. The conflict spread, and was maintained with great gallantry on both sides, but with hardly any other plan than that of fighting straight forward. At first the French possessed considerable advantages, and their cavalry, charging rapidly through the fields of rye, a grain which grows in Flanders to a great height, came unexpectedly on some of our battalions, which suffered severely in consequence, but fairly repelled their antagonists. As our reinforcements came up, the superiority was progressively acquired by us. The French were driven back, and Ney, who commanded, sent to order up a body of twenty thousand men, which had arrived within three miles of Quatre Bras; but the answer was, that they had countermarched to Ligny by order of Bonaparte. They were soon afterwards ordered back, but were unable to join Ney until nine at night, when the fighting had ceased, and the field of action remained in possession of the British. The force engaged on either side did not exceed twenty-five thousand men. Our loss amounted to about five thousand; whilst that of the French appears to have been considerably greater. Both sides fully expected a new battle the next morning. The British, by the arrival of all their divisions, now formed a large army. The French, still strangers to the firmness of our troops, attributed their failure to accidental causes, and declared that their cavalry had been repulsed, *parce qu'ils n'avaient pas franchement abordé l'ennemi*.

Meanwhile there had been fought at Ligny a battle on a larger scale, and with greater preparation. On the slope of a rising ground, which, however, was much exposed, a Prussian army, of no less than eighty thousand men, awaited the attack of Bonaparte. The fighting began between

two and three o'clock, by the French gaining possession of the village of St Amand, on the Prussian right. To re-occupy this village Blucher made repeated efforts; and it was during one of the most furious of these that Bonaparte is understood to have ordered round the corps, the absence of which was so bitterly regretted by Ney. The battle now raged fiercely along the whole line. The masses of Prussian infantry drawn up on the slope were much thinned by the French artillery; but in the village of Ligny, which was repeatedly taken and retaken, the slaughter was peculiarly great. Such was the course of the engagement till the evening at half-past eight o'clock, when the French reserve, marching forward in columns, obliged the Prussians to leave the long-contested field. Their loss on this dreadful day was little short of twenty thousand; that of the French exceeded ten thousand.

Next day Bonaparte adopted the plan of detaching under Grouchy a body of thirty-four thousand men to follow the retreating Prussians, whilst, with the mass of his force, seventy-one thousand in number, he turned against the British, in the hope of fighting a battle at the head of superior numbers. Lord Wellington knew not the retreat of his allies till morning, when a similar measure on his part became indispensable; but as his army was in the best state, and as the Prussians had just received a reinforcement, retreat was necessary only until reaching a position favourable for fighting, and for awaiting the co-operation of his allies. Waterloo, he well knew, presented these advantages: his march thither met with no annoyance from the French; and the only fighting which took place on the 17th was at Genappe, in a cavalry action begun by our rear-guard. Bonaparte following with his van-guard, reached the ground opposite to our position, and in the evening ordered a partial cannonade to ascertain if we occupied the latter with an intention to remain. Concluding in the affirmative, he began arrangements for a battle; and next morning he continued under a similar impression, although in his army there was a general belief that we would not venture to await their onset. At ten o'clock he perceived by his glass, in march at a great distance, a corps which he immediately concluded to be Prussians. This necessitated his posting a body of above eight thousand men on his right to receive them; a disposition which deprived him of his numerical superiority, and caused the battle of Waterloo to be fought between equal or nearly equal forces. It began soon after mid-day by an attack on the post of Hougomont, a chateau or country-seat in front of our right, surrounded by an orchard. The possession of this point would have favoured the approach of the French to our right wing; but though they drove us from the orchard, all their efforts proved ineffectual against our troops, a detachment of guards, stationed in the building and within the court wall. This attack, though very obstinate and sanguinary, was in the eye of either commander only a prelude to the great onset in the centre, which commenced towards two o'clock, being planned by Bonaparte, and conducted by Ney, whose station during the action was in the high road leading straight to our centre. Our army made little show, the battalions being formed in squares, and partly concealed from view by the sinuosities of ground; whilst between each square there were openings sufficient to enable the battalions to deploy into line, as well as to afford our cavalry space to advance and charge. The squares were further placed *en echiquier*, like a chess-board, so that the enemy's cavalry, in venturing through an opening, exposed itself to a fire in front from the opposite square, and to a double flank fire from the squares which it had passed. Yet this firm array did not appal the French cuirassiers, who, confiding in past successes and in the protection of their armour, repeatedly tried the deadly experiment of

ency. attack. Never was the impetuosity of the French more conspicuous, and never was it more effectually opposed, whether we consider the firmness of our troops, the judgment of our general, or the efficiency of our artillery. The only ground gained by the French was the central point of La Haye Sainte and the space immediately in front of our line,—the whole being attended, said Ney, by a carnage the most dreadful he had ever seen. Meanwhile Bonaparte watched anxiously the moment when a partial breach or disorder in our line should afford him a favourable opportunity of attacking with his reserve. Ney repeatedly intimated an expectation of great success, but could report no positive advantage, even after the double charge made by the imperial horse guards at five in the afternoon. It became, however, indispensable to act, and Bonaparte could hardly doubt that the long-continued conflict must by this time have greatly weakened our line. Accordingly, between six and seven o'clock, the imperial foot guards, to the number of nearly thirteen thousand, were drawn from behind the ridge which had hitherto covered them from our fire; directed to advance along the high road leading to our centre; and harangued by Bonaparte, whom they answered with reiterated cries of *Vive l'Empereur*. We are now come to the decisive part of the battle, that part in which, till now, whether at Marengo, at Austerlitz, or at Ligny, success had uniformly attended the charge of a fresh and numerous corps. By what means did it fail at Waterloo? The answer is, that our line, though thinned, was nowhere disordered; that our battalions, though reduced, were firm in their position. Besides, the duke, apprised of the approach of his allies, moved round an additional force from his left to his centre, and directed our battalions to deploy from their squares into a line four deep. Its formidable aspect, and the knowledge of the approach of the Prussians, prevented Ney from attempting the last resource, namely, a bayonet charge by the guards. Their ranks, however, were rapidly thinned, for the fire from the British line was much more extensive and destructive than that of the columns of the enemy. It was now that the duke perceived the approach of the Prussian main body, and ordered a general forward movement; the French retired, at first slowly and in good order; but seeing that behind them all was falling into confusion, the artillerymen and wagon train cutting the traces of their horses, and pressing to gain the high road to which the Prussians were fast advancing, the retreat soon became a rout. Our troops advanced over the field of battle, crossed the hollow beyond it, and towards nine at night reached the ridge occupied by the French staff during the day. Their task was now fulfilled, and the Prussians were left to pursue the flying enemy. The loss on our side amounted to thirteen thousand men; that of the French opposed to us, exclusive of the loss caused by the Prussians, was about twenty thousand.

This great battle displayed no manœuvring; the plan was formed, and the whole was a succession of impetuous attacks and obstinate repulses; but the talents of either commander were not the less conspicuously displayed; the one in making no fruitless application of his force, the other in never permitting the ardour of his troops to lead them from their ground or to deviate from a defensive plan. Bonaparte committed two errors; first, throwing away his superb cavalry so early in the action; and, secondly, as a consequence of this, ordering the advance of his guards, who, though they might penetrate our line at a particular point, had no chance of gaining a victory when unsupported by cavalry, and were besides likely to be soon wanted as a rear-guard to their own army. In the battle Lord Wellington appears to have committed no error. On the preceding days his fault lay in supposing Blu-

cher likely to act with discretion, and in remaining personally at Brussels instead of keeping near to his impatient coadjutor. Had the latter avoided fighting on the 16th, and retreated only twelve or fifteen miles, the allied forces would have been completely in co-operation; and their numbers, a hundred and sixty thousand, would have deprived Bonaparte of every chance of success.

From Waterloo to Paris, the advance of the allies was an almost uninterrupted march; marked on our part by the capture, by escalade, of two towns, Cambray and Peronne, and on that of the Prussians by an unremitting pursuit of the enemy. On one occasion (the 2d of July, near Versailles), a corps of French cavalry re-asserted their claim to fame, and taught the Prussians the hazard of a precipitate advance; but the success was partial, the evacuation of Paris unavoidable, and resistance hopeless, now that almost all Europe was pouring her armies into the French territory. Hence the second treaty of Paris, concluded after many vain appeals to the generosity of the allies, and which burdened France with contributions to the amount of nearly thirty millions sterling, exclusive of the support of an allied army on her frontier. This army, amounting at first to a hundred and fifty thousand men, was reduced in 1817 to a hundred and twenty thousand, and withdrawn in the end of 1818, when all bore the aspect of continued tranquillity on the Continent.

The time is scarcely yet arrived for viewing, with the calm impartiality of history, our war against Bonaparte; but the more reflecting part of our countrymen can hardly fail to regret our participation in the war of 1793. Those who know the inoffensive state of the French nation at that time, their general wish for peace, and the reduced condition of their army, can have no doubt that the efforts which subsequently poured forth such a host of combatants owed their existence solely to the threats of the allied powers. Without these the jacobins would not have triumphed, nor would a military adventurer, like Bonaparte, have had the means of acquiring an ascendancy. Louis XVI. might have been brought to the scaffold, and republican visions might have prevailed for a season; but the eyes of the people would have been opened to the blessings of a constitutional monarchy much earlier than when threatened with invasion, and obliged, in self-defence, to throw undue power into the hands of their new rulers. The first great error, that of the coalition of 1792, was the act of Austria and Prussia; but of the continuance of the continental war after 1795 we were almost the sole cause. Belgium and Holland had, it is true, fallen into the hands of France, and to recover them was an object of the highest interest; but in attempting this, our ministers made no adequate allowance for the jealousies, the prejudices, we may add the incapacity, of the governments whose aid was indispensable to success. In 1803 circumstances had become extremely embarrassing. France was confirmed in the possession of the Netherlands and Italy, and at the disposal of an ambitious ruler, who studied in peace only the means of further encroachment. What course was our government to follow? Were they to continue in peace, and to trust for our eventual safety to the progressive extension of our resources and the improvement of our army; or were they to resort to immediate war, and present, by our declared hostility, a rallying point to other powers? An experienced government would have preferred the former; the ministry of 1803 adopted the latter, not from views of ambition, but from yielding to that popular impulse, which it would not, however, have been impracticable to guide and control. As to the course of the war, it was, during the first two years, a contest without decided success on either side. In its third year, an ill-conducted coalition gave to France that superiority which was to be expected in the

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Parliament met on the 1st of February, and, after some business of minor importance, proceeded, in March, to discuss the interesting question of our military peace establishment. The navy had been reduced with sufficient promptitude; but there seemed, on the part of government, a disposition to keep the army on a scale neither required by the general tranquillity of Europe, nor justified by our financial means, which exhibited several symptoms of decline. Yet a motion for so moderate a reduction as ten thousand from the proposed number of land forces was negatived by two hundred and two to a hundred and thirty; and, in long debates which ensued relative to the army estimates, ministers carried every point, and were likely to keep up the whole upon an expensive scale; when, on the 18th of March, after a long and animated discussion, the question of continuing the property-tax, modified to five per cent., was decided against them by a majority of thirty-seven; there being two hundred and thirty-eight against two hundred and one. This signal and unexpected defeat necessitated a relinquishment of the war malt-duty, and a general reduction of expenditure, which we should have in vain expected from the reason or reflection of our rulers.

Another measure of importance was the regulation, after a long investigation, of the civil list, on a footing which was adopted as a standard in the beginning of the present reign. This was followed by acts for the consolidation of the English and Irish exchequers, and for the exemption of the bank from cash payments during two years; and, finally, by an act for striking off a new silver coinage. Among the minor proceedings of the session may be mentioned a grant of L.60,000 a year to the Princess Charlotte and her husband, with a provision, unfortunately too soon required, of L.50,000 to the latter in the event of her demise.

This year was distinguished by an important naval operation, namely, the attack upon Algiers. A project had been submitted to the sovereigns assembled at Vienna in 1814, and at Paris in 1815, for the expulsion of the Turkish militia from the Barbary states; but the representatives of the cabinet of London opposed this proposition, on the pretext that the existence of these states had been guaranteed by treaties; and as the scheme for expelling the Turks had been coupled with an absurd proposal to replace the janissaries with the conventual and military order of the knights of Malta, the success of the English opposition excited no regret.¹ It was generally agreed, however, that an end ought to be put to Christian slavery. This was a necessary consequence of the principle which

had been adopted and promulgated relative to negro slavery; and England, which had procured the recognition of the one, undertook the honourable task of effecting the other. But the measures at first resorted to were by no means adequate to the accomplishment of the end in view, and of course failed. An attempt was made to mediate between the regency of Algiers and the kingdoms of Sardinia and Naples; and Lord Exmouth, with a fleet of twenty-six ships, of which six were of the line, was employed to superintend this negociation. His Lordship accordingly appeared before Algiers in the month of April 1816; the dey yielded; and peace was re-established between these powers "en favorisant l'avarice du gouvernement Algérien." But all of a sudden the English government assumed a higher tone, and transmitted orders to Lord Exmouth to demand of the dey, first, the immediate liberation of all Christian slaves; secondly, restitution of the sums which had been paid by the courts of Naples and Sardinia for the ransom of such of their subjects as had been dragged into slavery; thirdly, the renunciation for ever of the practice of reducing to slavery the subjects of the Christian powers of Europe; fourthly, an obligation to treat the subjects of Hanover on the same footing and in the same manner as those of Great Britain.

The situation of Lord Exmouth was disagreeable and embarrassing; inasmuch as he was called upon to present, in the month of May, conditions altogether different from those which had been tendered and accepted in the month of April immediately preceding. But the die was now cast. Omar Pasha indignantly rejected the new propositions which the admiral was commanded to submit to him; and having assembled a general divan, obtained the concurrence of the tchiorbagis, the odobachys, and the yoldaches, who rent the air with their ferocious cries, declaring that they would rather perish than submit to propositions so humiliating. Pressed by the admiral, however, to give a distinct and categorical answer, the dey had recourse to finesse. He was a subject, he said, of the Ottoman Porte. The question at issue was one of the highest importance, and could not be resolved in a definitive manner by him and the militia of Algiers. It was therefore indispensable that he should take the orders of the grand seignior respecting it. Lord Exmouth was not deceived by this specimen of Algerine diplomacy. He knew that the pasha was a man of resolution as well as of address; that he was certain of the support of his furious and fanatical subjects; and that his sole object was to gain time in order to prepare for the conflict which, he foresaw, was impending. However, he affected to be for the present satisfied with the dey's answer, and withdrew to Gibraltar, ostensibly to wait for the decision of the Porte, but in reality for definitive orders from his own government. The latter had already decided on its course.

A powerful squadron was accordingly fitted out at Portsmouth, and dispatched to Gibraltar to reinforce the admiral, who, after its arrival, had under his orders five sail of the line, two of them three-deckers, five frigates of the largest and second class, five sloops of war, four bomb vessels, five gun-boats, furnished each with a sixty-eight-pound carronade, and a dock-yard sloop converted into a fire-ship or explosion vessel; in all twenty-five ships and vessels of war. At Gibraltar six Dutch frigates, under the orders of Vice-admiral Van Capellen, requested to

¹ Speaking of this scheme, Colonel Juchereau de Saint Denys remarks, "C'était mettre le fanatisme Catholique à la place du fanatisme Mahométan; c'était substituer à une classe oisive et improductive, une classe également ennemie du travail et également dépourvue d'industrie. C'était d'ailleurs un acte du pure demence et cruauté que de vouloir faire gouverner une population entièrement Mussulmane par des moines militaires qui n'avaient été créés que pour combattre perpétuellement et à outrance tous les ennemis du nom Chrétien, et particulièrement les disciples de Mahomet. Cependant ce projet absurde avait pu trouver des échos parmi les diplomates du congrès de Vienne." Pp. 118, 119.

join the British fleet in the approaching attack, and probably had stations assigned them, although it does not appear in the very precise and masterly order of battle given out by Lord Exmouth. The fleet arrived before Algiers on the 27th of August 1816. The wind was favourable, and a light breeze enabled the ships to take the positions which had been assigned to them. Lord Exmouth then transmitted his ultimatum to the dey. It embodied in substance the propositions presented in May, and required an immediate answer. None whatever was returned. The decision of the question was left to the arbitrement of battle. The fleet instantly weighed, and, led by the flag ship, Queen Charlotte, of a hundred and twenty guns, came to anchor within pistol shot, or rather less, of the batteries on the Mole, and those situated towards the western part of the town. The Queen Charlotte anchored across the entrance of the port, so as to take in flank and reverse such of the batteries as were furthest advanced, and she was supported by the Superb and Impregnable, which were directed to anchor as close to her as possible, to be made fast to each other, and hove together in order to concentrate their fire. The Albion had orders to supply the place of either of the two last mentioned ships that might be thrown out; and, in case of both getting their places, to present her broadside against a flanking battery of three guns, and enfilade the northern part of the works by throwing part of her fire upon the upper tier of the light-house battery. The Dutch appear to have taken their station on the left, in order to produce a diversion by commanding the exterior batteries and forts of the eastern part of the place. All these movements were executed with that admirable order and precision which distinguish the operations of the British navy, and also without opposition. The dey, it is said, wished to avoid the reproach of being the first to commence hostilities; and it has been thought that this capital fault contributed to decide the fate of the action. But this is a mistake. Had the Algerines opened their fire on the ships as they approached, the casualties might have been more numerous, but the result would have been the same.

When the British line of attack had been completely established, two shots were fired on the flag ship from the grand battery of the Mole. The instant he saw the flash of the guns, Lord Exmouth gave the word "Fire away my lads," and the cannonade immediately became general. The battle commenced at three o'clock in the afternoon, and continued without any intermission until nine in the evening, when a land breeze springing up, the ships weighed anchor, and gained an offing, to prepare, if necessary, for a renewal of the attack. While the combat was at the hottest, a detachment of English seamen and marines entered the harbour amidst a murderous fire of grape and musketry, and succeeded in setting fire to and destroying the whole of the Algerine fleet; an event which made a terrible impression on the population of Algiers, and in fact completed its demoralization. They then found what a formidable and daring enemy they had had the hardihood to contend with; and horror soon gave way to despair. The dey durst not risk a renewal of the combat; but next day (the 28th of August) gave his unqualified assent to the propositions which, twenty hours before, he had scorned even to entertain. The terms which Lord Exmouth had the glory to dictate were, first, the total abolition of Christian slavery in future; secondly, the immediate liberation of all slaves within the territories and dependencies of Algiers, of whatever nation they might be; thirdly, the restitution into the hands of the English admiral of the various sums which had been paid since the commencement of the year by Christian powers for the ransom of their subjects

dragged into slavery; fourthly, an indemnification to the English consul for the losses he had sustained, and an apology by the dey in the presence of his ministers and officers for the indignities which the consul had suffered in being arrested and detained in prison during the battle. This was followed by the conclusion of a treaty of peace with the Netherlands, by which all arrears were discharged, and that country ceased to figure among the tributaries of Algiers. Such were the results of this memorable battle, which, to use the words of Sir Charles Ekins (*Naval Battles*, p. 304), "bore the character of a crusade in behalf of Europe, rather than on the part of Great Britain alone, which excited a prodigious sensation throughout all Christendom, and which was believed to have put a final stop to Barbary piracies and depredations."

A general want of work and reduction of wages continued during the year, subjecting the lower orders to great distress, and exposing them to the arts of designing demagogues. Large assemblages, particularly in Spaffields, took place previous to the meeting of parliament; and on the day of its opening (the 28th of January) the regent was insulted on his way to the House of Lords. A secret committee of each house was soon afterwards appointed to examine papers in the possession of government, said to bear evidence of serious projects of insurrection; and each made a speedy report, declaring the existence of very dangerous societies. There was in these reports a strain of confident allegation, unaccompanied by specific proof or temperate reasoning, which brought to recollection the declamatory state papers of the French revolution, and gave the reports the appearance of documents framed to disseminate alarms, and justify extreme measures. They engaged, however, the serious attention of the house, and the result was a bill for the suspension of the habeas corpus act during the current session of parliament; a measure carried in the Lords by a hundred and fifty to thirty-five, and in the Commons by two hundred and sixty-five to a hundred and three. Towards the close of the session a second report from the secret committees produced an act for continuing the suspension of the habeas corpus to the 1st of March 1818.

The continued want of work, and the distress of the lower orders, led to an act for authorizing the issue of exchequer bills to persons finding employment for the poor. The same causes inducing the public to call loudly for retrenchment, the opposition, on the 25th of February, took the sense of the House of Commons on a motion to reduce the number of the lords of the admiralty, and mustered a hundred and fifty-two votes against two hundred and eight. As an offering on the part of government to the prevailing demand for retrenchment, an act was passed for abolishing the two sinecure offices of justice in Eyre.

Mr Abbot, who had filled the office of speaker of the house since 1802, finding himself incapable, from continued indisposition, of performing its arduous duties, sent in his resignation, and was succeeded by the Right Honourable Charles Manners Sutton. Mr Abbot was forthwith raised to the peerage by the title of Baron Colchester; and, on the 6th of June, a vote passed the Commons for settling on him a life annuity of £4000.

Parliament was opened on the 27th of January under circumstances which indicated that the want of work and the distress of trade, though still considerable, were less serious than in the preceding year. A secret committee, appointed anew by each house, reported to that effect; and on their recommendation was brought in a bill to indemnify persons, chiefly magistrates, who had acted in apprehending and detaining individuals suspected of treasonable practices. This bill was not carried without considerable opposition.

Regency.

The death of the Princess Charlotte having caused a blank in the succession to the crown, the marriage of the royal dukes became a subject of consideration; but the provision for any increase of expenditure was exposed to difficulty, as well from the distress of the public, as from the near approach of the time when the members were to meet their constituents. A motion made by ministers to grant L.10,000 additional to the Duke of Clarence was not successful, an amendment for reducing it to L.6000 having been carried by a hundred and ninety-three to a hundred and eighty-four. Votes, equally restricted, were passed in the case of the Dukes of Kent and Cambridge; and an attempt to obtain a similar grant to the Duke of Cumberland, who had been several years married, was negatived by a hundred and forty-three to a hundred and forty-six; but a provision of L.6000 a year was made for the duchess in case she should survive him.

Among the transactions of this year was a grant of L.400,000 to Spain, as a compensation for losses attendant on an early abolition of the slave-trade by that power. Certain acts were also passed for the humane treatment of negroes in our sugar colonies. The bank exemption act being about to expire, Mr Vansittart brought in a bill for continuing it another year, on the ground that the loans now contracting in England for France and Prussia carried capital out of the country, and prevented the bank, for a time at least, from diminishing its paper circulation.

Mr Brougham having, early in the session, brought in a bill for investigating the abuses of public charities, it was referred to a committee, and, after some discussion in the Commons, passed to the Lords. There it encountered opposition from Lords Eldon and Redesdale, and was returned to the Commons with material alterations; the commissioners charged with the inquiry being limited in their powers, and restricted to charities connected with education. The act, however, passed in this state, and the labours of the commissioners, like those of the committee on the education of the poor, have been productive of much public advantage. The session was closed on 10th June by a speech from the regent, containing a notice, not only of the prorogation, but of the dissolution of parliament; a measure which for many years had been announced by proclamation.

The new parliament met on the 14th of January 1819, and on the 21st proceeded to business. The demise of the queen having taken place during the recess (on the 17th November), one of the first measures was to vest the custody of the king's person in the Duke of York, who, very imprudently, under the circumstances of the country, demanded and received from parliament an annual allowance of L.10,000 for discharging an act of filial duty. This formed a striking contrast to the conduct of the Marquis of Camden, who, possessed of the lucrative sinecure of teller of the exchequer, relinquished L.9000 a year of it to the public; a sacrifice noticed in honourable terms in a vote passed in parliament on the occasion.

Such was the addition made to opposition, by an election under circumstances of general distress, that several measures were carried in this session against ministers; in particular, a motion on the 2d of March, by Sir James Mackintosh, for a revision of the criminal code, where the numbers were a hundred and forty-seven against a hundred and twenty-eight, and a motion for a committee on the state of the Scottish burghs, carried by a hundred and forty-nine to a hundred and forty-four. In the division on the grant of L.10,000 to the Duke of York, the opposition mustered a hundred and eighty-six votes against two hundred and eighty-one. But the impression excited by these successes was greatly enfeebled by a motion, which arrayed on one side all the strength of government and

that of the neutral party. We allude to Mr Tierney's motion for an "inquiry into the state of the nation," which was negatived by three hundred and fifty-seven to a hundred and seventy-eight; a division evincing that, though disposed to co-operate with opposition occasionally and for specific objects, the neutral party had no wish for a change of ministry. Encouraged by this success, Mr Vansittart came forward with the bold proposition of new taxes, to the extent of L.3,000,000, on the ground of a sum of that amount being absolutely necessary to give efficiency to the sinking fund. Of this sum the chief part was expected from an increase of the duties on malt, spirits, and tobacco; but part also was to be derived from a tax on foreign wool (6d. per lb.); a most singular impost in a country where the exportation of manufactured wool forms a main branch of the national industry. Ministers were conscious of its injurious tendency, but were obliged to bring it forward as an equivalent to the landed interest, for the fresh burden exacted from them in the malt-duty.

The further debates of the session related to the Catholic question and the resumption of cash payments. In the contest pending at this time between Spain and her American colonies, ministers took part with the mother country, so far at least as to discourage by act of parliament the enlistment of our officers and soldiers on the side of the insurgents. In the preceding session L.1,000,000 had been voted for building additional churches and chapels for the established religion in England; and this year L.100,000 was appropriated for a similar purpose to the established church of Scotland. The last act of the session was a grant made in July, of the limited sum of L.50,000, to be shared by government among persons settling on particular conditions at the Cape of Good Hope. This was the first pecuniary aid given by government towards emigration, which is accounted by some the only remedy for our overstock of labourers and manufacturers.

The revival of commercial activity in 1818 proved unfortunately of short duration. Distress returned towards the end of that year, and assumed an aggravated aspect in the course of 1819. This produced popular assemblages, and led, on 16th August, to an unfortunate scene at Manchester, in which the interference of the yeomanry cavalry to disperse a very numerous meeting of the people was productive of loss of life to a number of persons, and of bodily injury to a great many. The irritation excited among the lower orders by this proceeding, and by the continued pressure of poverty, led to the dissemination of a spirit of discontent and insurrection which necessitated the assembling of parliament on the 23d November. The speech of the regent, as well as the discussions of both houses, were directed to this painful subject; and the alarm excited among the aristocracy, joined to other considerations, having finally detached the Grenville party from the opposition, the latter now mustered in less formidable array. On the division for an amendment upon the address to the regent, the numbers were a hundred and fifty against three hundred and eighty.

Several bills were afterwards introduced by ministers for the prevention of disturbances. These consisted in imposing a tax on the petty publications circulated among the lower orders; impeding the circulation of libels; authorizing the seizure of arms; and forbidding military training or seditious meetings. These bills produced long and animated debates; but the most considerable division on the side of opposition, namely, that for limiting the act against seditious measures to three years instead of five, consisted of only a hundred and fifty votes against three hundred and twenty-eight. A motion of a more comprehensive nature for a committee on the state of the country was negatived.

mony. in the Lords by a hundred and seventy-eight to forty-seven; in the Commons by three hundred and ninety-five to a hundred and fifty.

After transacting this and other business of an urgent nature, parliament adjourned; but was soon after brought together by an event which, however conformable to the course of nature, was not at that time expected, namely, the death of George III. The day after the demise, agreeably to established usage, both houses met, and took the oath of allegiance to the new sovereign. On the 2d February they adjourned till the 17th, the day after the interment of his majesty. On that day both houses voted an address of condolence to the present king, after which they proceeded to transact such business as was pressing, and might, according to law, have continued to sit during six months; but ministers judged fit to resort to a dissolution. Another election now took place under circumstances of general distress. The new parliament met on the 21st April, and was opened on the 27th by George IV., in a speech declaring his anxiety for strict economy, but regretting that the state of the country was such as to admit of no reduction of the military force.

The peace of Amiens at first gave hopes of the improvement of Ireland by the introduction of British industry and capital; but these hopes were soon clouded by the renewed contest of 1803. In that contest the public in England and Scotland joined with almost unexampled zeal; but Ireland was less cordial, although it would be altogether erroneous to connect with any political party, whether Catholic or Protestant, the miserable insurrection of the 23d of July 1803. A plot to seize Dublin, almost as extravagant as that of the Cato Street conspiracy in London, was framed by a few infatuated individuals; and in the tumult, which burst forth with great violence but with feeble means, Lord Kilwarden, the chief justice, unhappily lost his life. A party of military soon dispersed the rabble; and of their leaders, most of whom were afterwards apprehended and executed, the only one entitled to notice was Robert Emmett, a young man whose education and talents ought to have placed him above such desperate attempts. The alarm thus excited engaged some time after the attention of parliament, and led to the enactment of two bills, one for a renewed suspension of the habeas corpus act in Ireland, the other for trying rebels by martial law.

The encouragement so generally given to the volunteer system in England and Scotland was not extended to Ireland, from a dread of embodying indiscriminately a people of whom so great a proportion were disaffected. The yeomanry, however, or select volunteers of Ireland, were very numerous, being about eighty thousand; and they had been highly instrumental in putting down the unfortunate insurrection of 1798. In addition to these, Ireland required a body of our regulars and militia amounting to nearly fifty thousand men as a defence against invasion, a guarantee of public tranquillity, and a check on illicit distillation and smuggling. The return yielded by Ireland in the shape of revenue was small, but her supply of recruits to our army and navy was very considerable.

The suspension of the habeas corpus act continued in 1805, a year remarkable as the first in which the Catholic question was submitted to parliament. It was brought forward in the Commons by Mr Fox, in the Peers by Lord Grenville; and curiosity was strongly excited in regard to Mr Pitt, who had lately accepted office without carrying his professed object, the grant of political privileges to the Catholics. The minister, however, extricated himself with address; declaring that if his vote could give the Catholics what they desired, they should not long want it, but that at present the prevailing sentiment was against their

claims; and this, in fact, was sufficiently shown by the division which ensued, and exhibited three hundred and thirty-six votes against them, with only a hundred and twenty-four in their favour. Next year the appointment to office of Lord Grenville and Mr Fox raised high the hopes of the Catholics; but the known repugnance of the sovereign to their claims induced these ministers to dissuade a direct discussion of the question in parliament, under an assurance that they would do whatever should be otherwise practicable for obtaining the removal of disabilities. Hence the bill of February 1807, which caused the dismissal of the Grenville ministry, and excited such a ferment in England against the Catholics, as to render it wholly unadvisable to bring forward the question for several years.

In 1809 the Catholic committee in Dublin held public meetings, but confined themselves to preparing a new petition to parliament. Next year they went much farther, and sought to assume an imposing attitude, proposing that ten persons should be deputed by each county to Dublin, and there form an assembly, charged not only with the duty of preparing petitions to parliament, but of taking measures for the redress of the general grievances of the Catholic body. The secretary for Ireland, Mr Wellesley Pole, alarmed at this design, addressed circular letters to the sheriffs of counties, requiring them to prevent the election of the proposed delegates, and even to arrest all persons taking part in such elections. But this order appeared too peremptory to the opposition, and a debate took place, in which Mr Wellesley Pole explained, that, so long as the Catholics confined their proceedings to petitioning, they had received no interruption; but that the delegates proposed to go much farther, and that a body, under the name of a Committee of Grievances, had assembled weekly in Dublin with all the forms of parliament. The house supported the measure adopted by Mr Wellesley Pole, and disapproved of the proceedings of the Catholics. Still the latter deemed this session not unfavourable to the discussion of their political claims, on account of the laurels lately won by our armies in Spain and Portugal, which counted many Catholics in their ranks. The question was brought forward by Mr Grattan, but lost by a large majority in both houses.

The same fate attended its discussion next spring. Another year elapsed; and in the session of 1813 it was brought forward with more combination and better prospects. Mr Grattan, supported by a part of the Cabinet, obtained the assent of the house to several preliminary resolutions; first, that the Catholic disabilities ought to be removed; secondly, that the Catholic clergy should bind themselves by oath to hold no correspondence with Rome except on ecclesiastical business; and, thirdly, that two commissioners should be appointed for examining into the loyalty of persons recommended as deans or bishops among the Catholics. The time occupied in these discussions was considerable, and gave occasion to the Catholic clergy in Ireland to testify their dissent from several of the provisions, particularly from that which restricted their correspondence with Rome. The knowledge of this dissatisfaction made a deep impression on parliament, and gave a turn to the question which induced the supporters of the bill to withdraw it for that session.

The ensuing year unfortunately gave further evidence of the want of temper and union among the Catholics. The court of Rome recommended their acquiescence with the propositions of Mr Grattan; but meetings of the Catholic board at Dublin disclaimed indignantly all foreign interference; and the clergy passed resolutions against the appointment of any Catholic bishop by the British government. The intemperate proceedings of the Catholic board

Regency. now led government to dissolve that body, and declare its meetings contrary to law.

These dissensions prevented the question from being submitted to parliament in 1814. Next year it was brought forward by Sir Henry Parnell, not by Mr Grattan, who declared that an unconditional grant of the demands of the Catholics was not to be expected, and that, without cultivating a spirit of conciliation, they never would succeed. The motion was lost by a great majority. In 1816 it was again brought before parliament, but in two distinct petitions, of which the more temperate, introduced by Mr Grattan, received the support of a hundred and forty-one against a hundred and seventy-two.

In the year 1817 the question was proposed by Mr Grattan, with the same views as in 1813, and supported by two hundred and twenty-one votes against two hundred and forty-five. The disappointment caused by this failure was soothed not only by the large minority, but by a very substantial concession, obtained soon after, on the proposition of ministers, namely, an act to enable Catholic officers in the army and navy to attain rank nearly on the plan proposed by the Grenville ministry in 1807. In 1818 the Catholic question was not agitated; but in 1819 the tone of that body having become more conciliating, Mr Grattan's motion for taking it into consideration was supported by two hundred and forty-one votes against two hundred and forty-three. Further details of the progress of this great measure towards a successful conclusion will be given in the course of the narrative.¹

There is another subject which deserves a particular notice in this place, more especially as it is connected with an event of deep and lasting interest. We allude to reform in the representation of the people. For several years anterior to 1816, the question had been but little agitated, and seemed to be abandoned to occasional declaimers and mere pot-house politicians. But the general distress which prevailed during that and the following years, with the discontent consequent on the privations to which the working classes were exposed, redirected their attention to a subject which they had too long lost sight of; and as it seemed obvious that the pressure of taxation, added to the evils occasioned by a transition from a state of war to a state of peace, formed the principal obstacle to

the development of our resources, and the expansion of the productive powers of industry, an opinion began to gain ground among the people, that the evils under which they suffered would never be materially mitigated, much less effectually cured, until a reform had been effected in our system of representation. One of the first symptoms or manifestations of the revival of an interest in this question was afforded by the Spafields meeting, which took place on the 2d December 1816; and although the tumult and violence in which that assemblage issued produced considerable alarm, and brought no little discredit on the cause, yet the defeat of government in the state prosecutions which followed, the continued pressure of distress, and, above all, the invincible truth that the people were inadequately represented, and that they experienced many of the evils of the worst government under one held forth as the best, served to overcome every disadvantage, and to keep alive the interest which had previously been excited. The Spafields riots were soon forgotten; and although no overt manifestations of any consequence took place during the two following years, still the conviction of the necessity of parliamentary reform continued to gain ground, and the cause began to find advocates in quarters where it had previously been regarded with indifference, if not with aversion. Reformers, though agreed in principle, were indeed much divided in regard to detail, or rather as to the extent to which the principle ought to be carried; and extreme doctrines began to be openly and boldly promulgated by many persons, who about the year 1819 received the appellation of radical reformers, and were at this time regarded with affected contempt, but with real terror, by the partizans of the existing system. But neither this diversity of views, nor the dread which many persons entertained or pretended of radical theories, retarded the progress of the cause, or prevented it from daily gaining new converts. On the 12th of July 1819 Birmingham ventured on the bold experiment of electing a legislative attorney to represent that great town in the House of Commons; and on the 16th of August following took place that memorable meeting at Manchester, already mentioned as accompanied with such disastrous results.

Such were the final acts of 1819, and of the reign of

¹ The following table exhibits, in a synoptical form, the times and results of the parliamentary discussion of the Catholic Question from 1805 to 1819 inclusive.

		House of Lords.			House of Commons.		
		For.	Against.	Majority.	For.	Against.	Majority.
1805.....	Motion for taking into consideration the Petition of the Irish Roman Catholics	49	178	129	124	336	212
1806.....	Not brought forward, in consequence of Mr Fox's advice.						
1807-8-9.....	Not brought forward.						
1810.....	Motion for a Committee of the whole House.....	68	154	86	109	213	104
1811.....	The same.....	62	121	59	83	146	63
1812, April 21...	The same.....	102	174	72	215	300	85
July 1.....	For taking it into consideration next year.....	125	126	1	235	106	129
1813, Feb. 25....	For a Committee of the whole House.....	...	...	...	264	224	40
March 9.....	For leave to bring in a Bill for removing disqualifications, &c.....	...	...	...	186	119	67
May 11.....	For a Select Committee.....	...	...	...	187	235	48
— 13.....	A Motion against the Bill negatived.....	...	...	...	245	203	42
— 24.....	A Motion (by the Speaker) for omitting the words in the bill, "To sit and vote in either House of Parliament".....	...	...	...	25	247	4
	(Not debated in the Lords this year.)						
1814.....	Not brought forward.						
1815.....	For a Committee of the whole House.....	60	86	26	147	228	81
1816.....	For consideration next year.....	69	73	4	141	172	31
1817.....	For a Committee of the whole House.....	90	142	52	221	245	24
1818.....	Not brought forward.						
1819.....	For a Committee of the whole House.....	106	147	41	241	243	2

George III. The public conduct of this monarch, and the tendency of the political principles by which it was governed, the reader will judge of for himself; from the narrative of the events of his reign; as to his private and domestic character, it is admitted on all hands to have been highly respectable. He was distinguished for probity and a sense of religious obligation; in his habits and manners he displayed equal moderation and simplicity; his disposition, though unyielding, was benevolent; and both as a husband and a parent he was highly estimable. His intellectual faculties, originally of no high order, were permanently clouded by the constitutional malady which exhibited itself at an early period of his life; he adhered with invincible obstinacy to the maxims of government instilled into his mind by his early instructors; and he cherished an attachment to the church of which he was the head, that amounted to a species of blind and blundering bigotry. Yet he loved and patronized the fine arts, particularly music and painting; he collected a noble library; he had a taste for agriculture and some of the mechanic arts; and he was at once plain and unpretending in his manners; all which circumstances go very far in the case of a king. Hunting and the penal laws against the Catholics formed the things which, next to his own family, he was most attached to; and his scruples of conscience long stood in the way of national justice.

CHAP. XVIII.

REIGN OF GEORGE IV.

Accession of George IV.—Assembling of Parliament.—Message from the King.—Debates.—Parliament dissolved.—Cato Street Conspiracy.—Thistlewood and his Accomplices seized, convicted, and executed.—Discontent.—Fomented by Government Spies.—Severe Measures.—The Queen.—Aversion of the King.—She Lands at Dover.—Message from the King respecting the Conduct of the Queen.—Bill of Pains and Penalties introduced.—Proceedings thereupon.—Bill of Pains and Penalties thrown out.—Scene in the House of Commons.—Character of the Proceedings against the Queen.—State of the Country.—General Distress.—Parliamentary Proceedings.—Grampound Disfranchisement Bill.—Droits of the Admiralty.—Brougham's Education Scheme.—Excitement connected with the Queen's Case.—Parliamentary Session of 1821.—Proceedings.—Circular Dispatch to our Missions Abroad.—Earl Grey's Motion.—Other Proceedings connected with it.—Motion relative to the Declaration issued by the Congress of Laybach.—Internal Affairs.—Mr Plunkett's Motion for a Committee on the Catholic Question carried.—Resolutions adopted.—Bills brought in.—Consolidated into one.—Passed by the Commons.—Thrown out in the Lords.—Parliamentary Reform.—Mr Lambton's Scheme.—Defeated by a manoeuvre.—Resolutions proposed by Lord John Russell.—Other Projects.—Grampound disfranchised.—Mr Hume's efforts in favour of Retrenchment.—Attempts to humanize the Criminal Code defeated.—Constitutional Association.—Distress of the Agricultural and Manufacturing Population.—Consequent Proceedings in Parliament.—Coronation.—Death of Queen Caroline.—State of Affairs at the commencement of 1822.—Session of Parliament.—Ireland.—Insurrection Act, and Suspension of Habeas Corpus.—Other Measures of Severity.—Insurrectionary Spirit unsubdued.—Unpopularity of the Lord-Lieutenant.—Reform.—Lord John Russell's Motion.—Mr Brougham's proposed Resolution respecting the Influence of the Crown.—Burgh Reform.—Mr Canning's Bill for the Admission of Catholic Peers passed by the Commons but thrown out in the Lords.—Finance.—Retrenchment.—Reduction of the Navy Five per Cents.—Scheme concerning the Naval and Military Pensions carried, but rendered abortive.—Measures for the Relief of the existing Distress.—Commercial Affairs.—Repeal of the Navigation Laws.—Death of Lord Londonderry.—Changes in the Administration.—New Government.—Reform.—Continental Relations.—Congress of Verona.—Affairs of Spain.—French Invasion and Overthrow of the Constitution.—Appointment of Commercial Agents to the New South

American States.—Financial Operations.—Reduction of Taxes.—Sir James Mackintosh's Resolutions.—Acts for the Amendment of the Criminal Law.—Ireland.—Catholic Claims.—Colonial Affairs.—Resolutions in regard to the Treatment of Slaves.—Government Circular.—Character of Mr Canning's Policy.—Independence of the South American States recognised.—Measures for unfettering Commercial Intercourse.—Combination Laws repealed.—Other Measures of a similar kind.—Reciprocity System.—Legal Reform.—Financial Arrangements.—Ireland.—The Catholic Association.—The Catholic Rent.—Conduct of the West India Planters.—Proceedings in Canada and at the Cape of Good Hope.—Domestic Affairs.—Meeting of Parliament.—Catholic Association.—Bill for suppressing it.—Debates on this subject.—Association reconstituted.—Bill for the Relief of the Catholics introduced.—Two subordinate Bills.—Declaration of the Duke of York.—The Bill passed by the Commons, but thrown out in the Lords.—State of Ireland.—Report of the Committee of the Lords.—Other Proceedings.—Bill for the Protection of Masters and Workmen against Combinations.—Modification of the Colonial System carried by Mr Huskisson.—Details.—Reduction of Taxation.—Consequences of Excessive Speculation of 1825.—General Panic and Distress.—Affairs of 1826.—Meeting of Parliament.—State of the Country.—Measures for alleviating the general Distress.—Small Note Circulation.—Opposition of Scotland to the Destruction of its Small Note Currency.—Successful.—Branch Banks established.—Advances on Deposits of Goods and other Securities.—Discussions as to the Cause of the late Panic.—Emigration Committee.—Petitions from the Silk Manufacturers and Ship-owners.—Mr Huskisson's triumphant Reply.—System of Free Trade.—Budget.—Discussion thereon.—Termination of the Burmese War.—Origin and Progress of this Contest.—Dissolution of Parliament.—General Election.—Effects produced in Ireland by the Catholic Association.—Deficient Crop.—Scarcity.—Order in Council for relieving the Distress.—Meeting of Parliament.—Lord Liverpool struck with Apoplexy.—Mr Canning's Interviews with the King.—He receives the Royal Commands to reconstruct a Cabinet.—Consequent Negotiations.—Combination against Mr Canning.—Cabinet formed.—Mr Canning joined by the Whigs.—His Ministry irresistible.—Mr Canning's Death.—His Character as an Orator and Statesman.—Succeeded by Lord Goderich.—Dissolution of his Government.—Parliamentary Session of 1826-27.—Corn Laws.—Resolutions.—New Bill passed by the Commons.—Abandoned in consequence of the Duke of Wellington's Amendment in the Lords.—A temporary Bill passed.—Other Questions.—Interference in behalf of Portugal.—Catholic Emancipation.—Lost by a Majority of four.—Duke of Wellington's Administration.—Dismissal of Mr Huskisson.—Foreign Policy of Britain.—State of our Relations with other Powers.—Portugal.—Greece.—Turkey.—Treaty of London.—Consequent Interference in the Contest between the Ottoman Porte and the Greeks.—Battle of Navarino.—Results of this Action.—Expressions applied to it by the New Cabinet.—Finance Committee.—Government Annuities.—Error in regard to them.—Settlement of the Corn Laws by Compromise.—State of the Common Law Courts.—Efforts of Mr Brougham.—Repeal of the Corporation and Test Acts.—Sir F. Burdett's Motion on the Catholic Claims carried by a Majority of six.—Motion in the Lords to concur in the Resolution of the Commons negatived.—Proceedings of the Catholics.—Mr Fitzgerald defeated in Clare.—Mr O'Connell returned for Clare.—Re-assembling of the Catholic Association in its original form.—Proceedings.—Pledges to be proposed to Candidates.—Party Feuds among the Peasantry hushed.—Clubs.—General Organization.—Mr Dawson's Speech at Derry.—Protestant Ascendency.—Measures.—Orange Lodges.—Brunswick Clubs.—Divisions in the Cabinet on the Catholic Question.—Opposition of the King.—Duke of Wellington's Letter to Dr Curtis.—Recall of the Marquis of Anglesey.—Meeting of Parliament.—Catholic Question recommended in the Speech from the Throne.—Catholic Association denounced.—Bill introduced for putting it down.—Association dissolves itself.—Bill passed.—Committee on the Civil Disabilities affecting Catholics.—Mr Peel's Speech in proposing it.—Nature of the Measure proposed for the relief of the Catholics.—Character of the Debates.—Large Majority in the Committee.—Discussion in the Lords.—Relative Division in 1828 and 1829.—Royal Assent given to the Relief Bill.—Disfranchisement of the Irish Forty-shilling Freeholders.—Injustice of this Measure.—Parliament prorogued.—State of the Country.—Character of the Administration.—Parliamentary Reform.—Assembling of Parliament in 1830.—Sir James Graham's Resolution.—Va-

Reign of
George IV.

rious Motions and Proceedings.—Cry for Reform daily increasing.—Death and Character of George the Fourth.

George III. closed his career on the 29th of January 1820. He had been so long withdrawn from the eyes of the world, that the event could scarcely be called the termination of a reign. The prince who succeeded him on the throne had virtually discharged all the offices of king for nearly eight years. The same line of policy continued to be persevered in, as nearly as events permitted; the same ministers continued to manage the affairs of state; the prosperity of the country received no sudden shock nor increase; and public opinion went on to form itself, without experiencing any sudden impulse. The customary bell, which announced by its monotonous clang that a king had been gathered to his fathers; the sorrow, real or affected, of personal friends; a slight alteration in the tenor of writs; and some unimportant changes in the arrangements of office, were the only indications that a new reign had commenced.

The ministers, as a matter of form, resigned their places the day after the death of the old king, but were all of them immediately reinstated. It is the law and custom of the country, that if no parliament be in existence at the death of the king, the last immediately revives, and continues to sit for six months, unless dissolved at an earlier period by the new monarch. If a parliament, however, be in existence but not sitting at the time, it assembles with the least possible delay. The House of Commons met, on the present occasion, about noon of the 31st of January, and the Lords a little later in the same day. At this meeting no business was transacted beyond the simple ceremony of taking the oaths of allegiance. Some additional members were sworn next day, when the house adjourned till the 17th of February. This was done in conformity with the uniform practice of parliament on the demise of a king to suspend its operations until after the funeral.

On the day appointed both houses again met; and by this time ministers had fully resolved upon the course they were to pursue. Messages from the king were presented by Lord Liverpool to the Peers, and by Lord Castlereagh to the Commons. The tenor of both was the same. The king felt persuaded that the House of Lords, and his faithful Commons, sympathized with the late loss which he and the nation had sustained. He reminded them that the melancholy event imposed upon him the necessity of summoning a new parliament within a limited period; intimated his opinion, that in the present state of public sentiment it was expedient to take this step without delay; and recommended to the Commons to adopt, and to the Lords to concur in, such measures as might be found necessary to provide for the public exigencies during the interval which must elapse between the dissolution of the old and the opening of a new parliament.

The reasons assigned by ministers for thus precipitating the assembling of a new parliament were in themselves quite satisfactory. The quantity of business before the legislative bodies was so great, that it could not possibly be completed within the prescribed period. The assizes would take place during its continuance, and render the absence of many members necessary; while the cares and bustle of an approaching election would distract the attention of all. Notwithstanding the weight of these arguments, the opposition discovered, or affected to discover, another reason for the resolution which had been taken of dissolving parliament immediately. The unpardonable assault upon the people at Manchester during the preceding year, and the subsequent policy of ministers, had deeply exasperated a large body of the lower orders; and the

violence of their language had added to the ministerial party, already numerous among the wealthier portion of the community, all the timid and wavering adherents of opposition. That party saw, therefore, in the attempt to precipitate a general election, the desire of ministry to obtain a parliament returned at a moment when the influence of fear had materially swelled their majority, and secured, by the prospect of a long career, against that popular influence which uniformly exercises greater control over the members in proportion as an appeal to their constituents approaches.

In the desultory opposition, however, which was offered to the course recommended in the king's message, Mr Brougham was the only speaker who ventured to take this ground. The rest of his party, both in the Lords and the Commons, discussed the question as one of form and privilege. Lords Lansdown, Grosvenor, and Carnarvon, in the upper house, and Mr Tierney in the lower, while they admitted the dissolution of parliament to be regular and constitutional, objected to the recommendation to provide for it, as savouring of dictation, and infringing the liberty of the legislature. The ministerial party, however, strengthened as it had been by its accession of numbers, was too strong to be resisted. Bills were introduced, continuing the mutiny act and the marine mutiny act until the 24th of June. Certain sums of money were voted towards defraying the expenses of the army and the extraordinary civil charges. And in addition to these, two hundred thousand pounds were granted "towards satisfying such annuities, pensions, or other payments, as would have been payable out of the consolidated fund of Great Britain, or out of the civil list, in case the demise of his late majesty had not taken place before the 5th of April 1820." This grant is in no other way remarkable than as having afforded the first opportunity of introducing a discussion which was destined to engross almost the whole attention of parliament during that year. The opposition, understanding that in this sum of two hundred thousand the queen's allowance was included, made a stand to have an express provision made for her. The resolutions were, however, agreed to without any alteration in their form. When carried to the House of Lords, they experienced some further opposition from Lord Lauderdale, on the plea that the power which had been assumed by the House of Commons, of appropriating the supplies and authorizing the payment of pensions otherwise than by the constitutional method of passing the appropriation bill, was an infringement on their lordships' privileges. This difficulty was met by Lord Liverpool, who moved an amendment, "that this house, from the state of public business, acquiesce in the resolutions of the Commons, although no act may be passed to give them effect." These necessary arrangements having been completed, parliament was dissolved in the usual form on the 29th of February, and a new one summoned to meet on the 23d of April.

In the mean time government was beginning to learn by experience the effects of attempting to repress by arbitrary enactments the public expression of popular feeling, in the growth of those dark and sanguinary plots which are ever the consequence of violent attempts to stifle complaint. Arthur Thistlewood, a man of respectable connections, and originally of some property, but who, by his own profligate habits, had been reduced to a state of abject poverty, entered into a conspiracy, with a few others of like desperate fortunes, to overturn the government. Thistlewood's plan was to seize the opportunity of the late king's funeral, when it was expected that all the military would be engaged at Windsor, to make themselves masters of London, and plunder the shops. Having, by the license they held out, attracted a sufficient

of force of the needy and discontented to rally round them, IV. he proposed to establish a provisional government, and send to the sea-ports, to prevent all gentlemen from leaving England without passports. The more sanguinary brutality of his uneducated companions in part overruled him. It was resolved to assassinate the ministers, when assembled at a cabinet dinner at Lord Harrowby's. While one party effected the massacre, others were to seize the two pieces of cannon in Gray's-inn Lane, and the six pieces in the artillery ground. Emissaries at Hyde Park were to intercept any messenger dispatched to Windsor. A body of conspirators were to cross the Thames and take the telegraph, to prevent any communication with Woolwich. The Mansion House was fixed upon as the seat of the provisional government. A few disbanded soldiers had been induced to join in the plot; a motley assortment of arms had been provided; and proclamations were written out in the name of the provisional government, for the purpose of being stuck up on the walls.

The conspirators were as deficient in caution as their plot was in any reasonable likelihood of success. They were surprised in the garret or hay-loft in Cato Street where their meetings were held, on the evening of the 23d of February, the same on which the massacre of the ministers was to have been perpetrated. After a desperate resistance, in which one police-officer was killed, and several severely wounded, the greater part of the band were apprehended. Thistlewood and some others were not secured till next day. A few of the more cowardly turned king's evidence, and the guilt of the conspirators was clearly established. Five of them, Thistlewood the originator of the plot, Brunt his lieutenant, Ings, who was to have been secretary to the provisional government, Tidd, and Davidson, a man of colour, were ordered for execution, and suffered the penalty annexed to treason on the 29th of April.

The most diligent inquiries of government could not discover any ramifications of the plot. Every thing that has since transpired strengthens the belief that these desperadoes stood alone. Thistlewood had, a short time before his arrestment, made a tour through the manufacturing districts of England and Scotland. There can be no doubt that he had endeavoured to engage the radical party in some undertaking equally violent with that for which he suffered, but more extensive. About the close of 1819, or early in 1820, a messenger was dispatched to Thistlewood from Leeds, to assure him that he need look for no assistance from the country in his attempt. The opinion of his want of success in the attempt to stir up the working classes to co-operate with him, is further corroborated by the coarse manner in which he affirmed to one of his associates, that "no one who was worth ten pounds was worth any thing for the good of this country."

Still, although even the discontented portion of the community turned with disgust from projects of assassination, there was much in the disposition of the lower orders to afford grounds for apprehension to the ministers under whose auspices Castlereagh's acts had been introduced and passed into a law. Throughout the manufacturing districts the working classes were associated in unions. The writer of this sketch remembers in the autumn of the preceding year to have accidentally overheard a discussion held by a pretty numerous body of weavers in the neighbourhood of Glasgow. The prevailing sentiment seemed to be, that the interests of the rich were diametrically opposed to those of the poor; and the conviction was pretty generally expressed, that a time was near at hand when the relative positions of the parties would be inverted. In this state of affairs spies were liberally dispersed through the disaffected districts; and these men,

whether with or without the encouragement of ministers, endeavoured to break the force of public discontent by encouraging partial explosions. In the course of the month of March, inconsiderable bodies of the people rose in arms in Lanarkshire and Yorkshire. These demonstrations, by alarming the holders of property, attached them more firmly to government. The punishment of the insurgents cast a damp over the spirits of the disaffected; and, to strengthen the impression, the most severe measure authorized by the late laws was likewise awarded to every man who expressed in strong language his disapprobation of the policy of ministers.

The events to which we have hitherto adverted served either to indicate the strength of the ministry or to increase it. The elections to the new parliament left them much in the same position in which they were at the dissolution of the old. But a discussion was impending over them, which threatened to task their powers to the utmost. The dispute between the Prince and Princess of Wales was a matter of very secondary importance compared with that between the king and queen of England. The hatred which George IV. entertained for his consort was invincible. He had relinquished his early principles and most intimate friends, rather than struggle with a party which he found firmly established in power; he had conformed to the system of policy they had adopted, without suggesting one modification; he was contented that the course of national exertions should be controlled and guided by other minds; but his passive disposition left him the moment the question was urged of conceding even the external resemblance of respect to the queen. Her name was omitted in the liturgy; the utmost anxiety was displayed to avoid, if possible, making any parliamentary provision for her as queen; the common civility of announcing to her the death of her father-in-law, who was moreover her blood relation, was not observed; and she was given to understand, that if she attempted to return to England, she would be instantly visited with a bill of pains and penalties. But her majesty stood upon her rights; and after several ineffectual negotiations on the part of those friends of the royal disputants, who feared the consequences of a public agitation of the question at issue between them, she landed at Dover in the month of June. Her journey to London was a triumphant progress; and her reception there by the populace most enthusiastic.

On the 6th of June, the Earl of Liverpool in the Peers, and Lord Castlereagh in the Commons, presented a message from the king, recommending to the immediate attention of these bodies "certain papers respecting the conduct of her majesty since her departure from the country." The Lords, after slight discussion, referred the communication to a secret committee. The same course was adopted by the Commons, but after a more violent debate. Her majesty's friends had in that house touched upon the subject even before the dissolution of the old parliament. Lord Archibald Hamilton had complained of the unconstitutional dictation to the church of Scotland on the point of praying for the queen. The resolutions by which a temporary supply was voted to the king had not been allowed to pass without the question being asked, in what manner the interests of the queen were to be secured. Now the storm burst in its full strength on the heads of ministers. Not a few members declared, that without examining witnesses, they were convinced of her majesty's innocence by the line of conduct which the government had pursued.

The guilt or innocence of Queen Caroline is a question of very subordinate importance in an outline like the present. It deserves attention merely because of the influence it exerted upon the public mind, and its effects upon the subsequent course of events. Now that the excitement of

Reign of George IV. the contest has subsided, few, we believe, would assert her innocence; but if ever suspicious conduct was susceptible of an apology, it was in her case. Viewed as a private individual, the king had no right to complain of her behaviour. The allegation that the honour of the country was at stake, was a transparent disguise, through which his obstinate indulgence of a private pique, at the hazard of national tranquillity, was clearly discernible; while the ministers, who were servile enough to pander to this royal self-will, disgraced themselves for ever; and that this was the feeling of the wealthy, as it was of the poorer classes, is evident from the narrow majorities which an administration so strong on every other question commanded in behalf of their bill against the queen.

A brief sketch of the proceedings in the House of Lords will suffice to show the character of the prosecution. On the 5th of July Lord Liverpool presented a bill of pains and penalties against the queen. Her petition to be heard by counsel was presented the same evening, and refused. On the 6th her majesty again petitioned the house, requesting, that if their Lordships were resolved to refuse her a hearing at that stage, and likewise to refuse a list of the witnesses to be adduced against her, they would at least allow her counsel to state at their bar the nature of her claims. This request was in so far complied with, that Messrs Brougham and Denman were heard relative to the mode and manner of the proceedings to be had upon the bill, and the time when these proceedings should take place. Their arguments were ineffectual. A list of witnesses was refused. The bill was ordered to be read a second time, and evidence to be led during its second reading. The proceedings commenced on the 17th of August, and were continued, with scarcely any intermission, till the 4th of November. On that day the Lords resolved that the bill should be read a second time, by a majority of twenty-eight, in a house of two hundred and eighteen. The divorce clause was warmly attacked in the committee, but finally retained by a majority of sixty-seven in a house of a hundred and ninety-one. When their Lordships came to divide upon the question of the third reading, it was still carried in the affirmative, a hundred and eight voting for, and ninety-nine against it. Lord Liverpool immediately announced, that, looking to the narrow majority and the temper of the country, he had come to the determination not to proceed further with the measure. He accordingly moved that the bill do pass that day six months.

During the trial repeated attempts had been made by the House of Commons to put a stop to the proceedings. Ministers, unable to parry the reiterated and vehement attacks directed against them, had recourse to repeated adjournments. No sooner had the bill been thrown out than the House of Lords adjourned to the 23d of November, to which day the House of Commons at that time also stood adjourned. There was a call of the house for that day, and Mr Brougham having communicated to the speaker that a message would be sent down from the queen, suggested at the same time his taking the chair at one o'clock, in order that there might be an opportunity of receiving the message before the meeting of the Lords. At one o'clock about a hundred members, chiefly of the opposition party, were present, but the speaker did not appear. He was understood to be closeted with Lord Castlereagh. At length he entered the house, and exactly at two the reading of prayers concluded. Mr Denman immediately rose and announced that he held in his hand a message which the queen had commanded him to present to the house. Before he could proceed the deputy usher of the black rod entered. His appearance was the signal for uproar. "Mr Denman!" "Withdraw!" were vociferated from fifty throats.

The usher summoned the house to attend the lords commissioners in the House of Peers. Amid the surrounding clamour he was inaudible; nevertheless the speaker rose, and, accompanied by Lord Castlereagh and the chancellor of the exchequer, followed, amid cries of "Shame!" both from the opposition and ministerial members. The speaker on his return declared the house adjourned to the 23d of January.

Respecting the rank injustice of the proceedings against the queen there cannot now be two opinions. She was attacked by an anomalous procedure, which was neither trial nor bill of divorce. The pains and penalties inflicted by the bill were such as could not have been extended to any other English subject. The law of England guarded every other woman in the kingdom against such a measure. Again, by adopting the mode of procedure by bill, her prosecutors escaped the necessity of furnishing her with a list of witnesses, and thus crippled her defence. Lastly, by allowing the measure to drop after the third reading had been carried, the ministers clearly established that the personal degradation of the queen was all they sought for, and that the vindication of the national honour was a mere pretext. In what other instance was that iron administration known to pause out of respect to public opinion? The effect of the proceedings upon the power of the ministry was twofold. It distracted the attention of the country for a time, and men ceased to brood so incessantly over their distress; but, on the other hand, it swelled the ranks of opposition, and embittered its tone of feeling.

Amid these stormy discussions, in which the remotest districts keenly participated, the more vital interests of the country were comparatively neglected. Still the universal stagnation of business, and the consequent suffering of all classes, did not admit of their being entirely neglected. A petition from the merchants of London, presented by Mr Baring, elicited an animated and instructive discussion of the causes and remedies of mercantile distress, but without leading to any result. The subject was resumed on the 11th, when a petition was presented from Birmingham, but with as little effect. On the 16th Lord Stanhope called the attention of the Lords to the distress of the working classes, and moved for a committee "to inquire into the best means of giving employment to the poor, especially in the manufacturing districts." Lord Liverpool exposed in the most lucid manner the visionary nature of the schemes suggested by Lord Stanhope, and the motion was negatived without a division. The Marquis of Lansdown's motion on the 26th, for a committee to inquire into the means of extending the foreign commerce of the country, which was agreed to, drew from Lord Liverpool an exposition of his views of commercial policy. He insisted upon the necessity of adopting a comprehensive system, and adhering to it; remarked that the fewer laws there were, the better; disapproved of the views adopted by those who represented the interests of the farmer and the manufacturer as adverse; and, after proposing many excellent principles, and protesting against their practical application, came to the conclusion that there was no harm in inquiry, but great danger in action. On the motion of Mr Baring, a similar committee was appointed by the Commons on the 5th of June. The first report of Lord Lansdown's committee was presented on the 3d of July. It was confined to an inquiry into the state of the timber trade, and an investigation of the means of its improvement. A motion made by Lord Milton the same evening in the House of Commons, for repealing the duty on the importation of foreign wool, was negatived without a division.

The distress was not confined to the manufacturers; for the table of the House of Commons groaned beneath a

of load of agricultural petitions. Mr Holme Sumner moved, on the 30th of May, that they be referred to a select committee to examine and report on them. The interests of the country gentlemen were at stake, and, notwithstanding the earnest opposition of ministers, a majority of twenty-nine determined in favour of a committee. Mr Baring moved an adjournment of the house, in order that the committee might be appointed at a time when there was a full attendance. Mr Robinson (president of the board of trade) proposed next evening, with a view to neutralize the effect of Mr Sumner's motion, that the labours of the committee should be restricted to devising means for the prevention of frauds in striking the averages under the corn laws of 1815. This motion was carried by a majority of a hundred and twenty-three. When Mr H. Sumner presented the report of the committee on the 8th of July, he complained of the narrow limits within which the inquiries of the committee had been restricted, and expressed his conviction, that unless much more was done for the agricultural interest, the difficulties under which it laboured must ultimately prove overwhelming. Mr Western added, that the committee had recommended a new mode of taking the averages, but that it was one which would rather facilitate than retard the opening of the ports.

The only other important discussions in parliament during this agitated year regarded parliamentary and financial reform, and the education of the poor. To the first-mentioned head belongs the fate of a bill passed by the Commons for suspending the issue of writs to four boroughs convicted of corrupt practices, and which was allowed to fall to the ground in the Lords, not having reached a second reading at the time when parliament was dissolved. Lord John Russell's bill for the disfranchisement of Gram-pound was read the first and second time on the 9th and 17th of May. Lord Castlereagh and Mr Canning attacked with much inveteracy the clause which proposed to transfer the franchise to the town of Leeds, on the ground that this would be "to admit all that had been urged on the question of parliamentary reform." On the 25th of May Lord Archibald Hamilton called the attention of the house to the absurd and unjust system by which, in Scotland, the right of voting had been detached from the possession of the soil. He intimated an intention of submitting a measure to restore the franchise to the real landowners, continuing their votes to all such as now possessed them. Under the head of finance we may class the attack made by Mr Brougham on the droits of admiralty. In an eloquent speech he demonstrated that the property claimed in that fund by the crown was unwarranted by the constitution; dangerous to the liberties of the subject, since parliament had no control over it; an inducement to the piratical commencement of hostilities, without a declaration of war; and burdensome in the highest degree. Mr Canning spoke at great length, but adduced only one argument. "The system of the civil list was more adapted to a monarchical constitution than that of the American government could be; and he would not be induced by any pecuniary temptation to the sovereign, to strip off trappings which were neither costly to the people nor dangerous to the constitution." Sir James Mackintosh and other eminent members of the opposition argued on Mr Brougham's side of the question at great length; but the only other speaker of the ministerial party was the chancellor of the exchequer, who contented himself with pointing out some discrepancies of opinion among his antagonists. Mr Brougham's motion was lost by a majority of a hundred and eighteen.

We have now arrived at the last topic which we indicated as having in the course of the year 1820 occupied the attention of the House of Commons. On the 28th

of June Mr Brougham moved for leave to bring in a bill for the better education of the poor in England and Wales. He stated that there were, in the endowed and unendowed schools of England, means of educating six hundred and fifty-five thousand children; and that taking the whole children of the kingdom as one ninth or one tenth of the population, this provision would suffice for no more than one fourteenth or one fifteenth of their number. But from this six hundred and fifty-five thousand were to be deducted thirty-three thousand who were at dames' schools, where they learnt next to nothing; a deduction which would reduce the number educated to one sixteenth. Previous to the establishment of schools under the Bell and Lancaster system, it was only one twentieth. There were three thousand five hundred parishes in England without schools. The proportion educated varied in the different counties from one forty-sixth to one eighth. It was found that crime kept pace with the want of education. Mr Brougham's bill embraced four objects;—the foundation of schools; the appointment and removal of masters; the admission of scholars; and the improvement of the old education endowments. According to the ratio of schools in the county of Devon, the total outfit would be eight hundred and fifty thousand pounds; according to that of Cumberland, only four hundred thousand pounds. The annual expense might average a hundred thousand pounds. The motion having been agreed to, Mr Brougham brought in his bill on the 8th of July.

During the closing months of the year the queen continued the great object of attention, and the press laboured incessantly to keep up the excitement. The Whigs and reformers, encouraged by the popular feeling which was thus excited against ministers, again put themselves in motion. Meetings were held in different parts of the country, at which strong resolutions were adopted respecting the necessity of a reform in parliament. In this temper of the country the legislative session of 1821 commenced on the 23d of January.

The opening speech from the throne was eminently vague and unsatisfactory. The only allusion to the revolutions in Spain, Portugal, and Naples, consisted of an assurance that the country continued at peace with foreign powers, and an expressed determination, should the events in Italy lead to hostilities, to preserve this country from participation in them. The truth was, that Lord Castlereagh had committed himself with the allied sovereigns more than the spirit of the country could tolerate; and the only course left open for ministers was, to profess a strict neutrality, even between opposing principles. About the opening of the session a circular dispatch to his majesty's ministers at different courts, disavowing, on the part of Great Britain, any participation in the plans of the allies, dated the 19th of January 1821, was communicated to both houses. This document was by no means satisfactory to the opposition. Lord Grey moved, on the 19th of February, for the production of all the communications between the British government and that of Naples relative to the late occurrences in that kingdom. The noble earl maintained that "England, by assuming the tone of neutrality at the moment she did, gave her tacit approbation to the conduct of Austria." The ministers asserted the right of an independent nation to regulate its own government, but admitted the case of Naples to be an exception. The Earl of Liverpool affirmed, that the document already submitted to the house afforded sufficient evidence of the good faith of government towards Naples; and the motion was ultimately negatived without a division. Lord Grey's motion was followed up by one on the part of Lord Lansdown on the 2d of March. His lordship proposed to thank the king for laying before the house copies of the dispatch to

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his majesty's ministers at foreign courts; to express the satisfaction felt by the house at his majesty's refusing to participate in the designs of the allied sovereigns; and to intimate its earnest hope that his majesty would exert his influence with the allied powers to prevent or repair the consequences of measures which might eventually disturb the tranquillity of Europe, and which threatened the independence of sovereigns and the security of nations. Lord Liverpool condemned the principles of the allies; but maintained that England had no right to prescribe a rule of conduct to Austria, and that it was unwise to remonstrate when we were not prepared to enforce our suggestions by arms. The result of the debate was a majority of forty-seven in favour of ministers. A like series of hostile attacks were made almost simultaneously upon ministers in the House of Commons. The motion of Sir James Macintosh for the papers called for by Lord Grey was made and negatived on the 21st of February. The only novelty in the ministerial defence was Lord Castlereagh's assertion, that the declaration emitted by the allied sovereigns assembled at Troppau did not contain their final determination. The event has not borne his lordship out in this assertion. The motion was negatived by a considerable majority. The pretext laid hold of for resuming the discussion in the Commons differed from that of Lord Lansdown. Sir Robert Wilson moved, on the 20th of March, for the production of a letter from the English ambassador Sir William A'Court to the Neapolitan minister for foreign affairs, in which it was declared that England intended to remain neutral, unless interference "should be rendered indispensable by any personal insults or danger to which the royal family may be exposed." Sir Robert maintained that the right claimed to interfere if the royal family of Naples were exposed to personal insult or danger, was incompatible with the rights of independent nations. Ministers contended that the interpretation of Sir William A'Court's letter was strained and unjust. The motion was subsequently withdrawn. Here the matter rested till after the breaking up of the congress of Laybach. The final declaration of its members, that "useful or necessary changes in legislation, and in the administration of states, ought only to emanate from the free will, the intelligent and well-weighed conviction of those whom God hath rendered responsible for power,"—and that they regarded "as legally null, and as disavowed by the principles which constitute the public right of Europe, all pretended reforms operated by revolt and open hostility,"—was regarded by the whole English nation as directly condemnatory of its constitution, and subversive of the independence of all nations. Mr Hutchinson attacked ministers on the 20th of June for their tame acquiescence in the monstrous doctrines promulgated by the despots of the Continent, and proposed an address to the throne, calling upon the king to assume an attitude of more determined opposition to the introduction of new principles into the laws of nations, which, if acted upon, "would not only prevent the establishment of all rational liberty, but tend to render perpetual despotisms of the worst kind." The motion was negatived by a large majority, on the ground that the circular of the 19th of January sufficiently expressed the views entertained on these points by the English nation. A yet stronger indication of the feeling of the country on this point was given to ministers next day, when one of their most influential and strenuous supporters, Mr Stuart Wortley, in moving for copies of the declaration issued by the courts of Russia, Prussia, and Austria, and of the circular dispatch published at Laybach on the 12th of May 1821, called upon the house to express strongly and markedly its disapprobation of the principles advanced in these documents. Lord Londonderry (Lord

Castlereagh had by this time succeeded, on the death of his father, to the paternal title) opposed to this motion his never-failing answer, that it was unnecessary. "The declaration of the 19th of January had announced to the world our dissent from the principles acted upon at Troppau and Laybach, and no good could result from engaging in a war of state papers." Mr Wortley's motion was accordingly negatived. The only other discussions respecting the foreign policy of Britain which occurred during the year 1821 were, an address from both houses of parliament to the throne on the state of the slave-trade, agreed to without the sanction of ministers, but likewise without any active opposition on their part; and Mr Hume's motion for inquiry into the conduct of Sir Thomas Maitland, the lord high commissioner of the Ionian Islands, which was negatived.

The speech glanced at the internal affairs of the nation in a manner quite as unsatisfactory as that in which it treated foreign relations. Several branches of manufactures and commerce were said to have improved, and the amount of revenue to have increased, avowedly from new taxes. The speech concluded with an expression of confidence in the popular attachment to the king's person and government, and an exhortation to preserve respect for established institutions. The opposition, still much inferior in numbers to the ministerial adherents, but strong in its reliance upon the popular feeling, and encouraged by the wavering allegiance of the country gentlemen, whose sufferings had led them to doubt the infallibility of the party to which they had hitherto adhered, made no hostile demonstrations upon the moving of the address, which, as usual, was a mere echo of the speech. It scarcely allowed, however, a day to elapse before it commenced a series of attacks upon the whole system of ministerial policy. The session of 1821 was one of unintermitting hostilities directed against ministers in every department, the administration preserving in almost every instance the attitude of defence.

The first question started by the members of opposition was one of constitutional reform. With considerable tact they selected one, upon the merits of which the ministerial phalanx, nay the cabinet itself, was known to be divided in opinion, namely, that of Catholic emancipation. By this arrangement they secured a prospect of disturbing, in some measure, the harmony of their adversaries, and at the same time exposed themselves to less unanimous hostility in the opening of their campaign. Mr Plunkett moved, on the 28th of February, that the state of the laws affecting Roman Catholics be taken into consideration by a committee of the whole house. Mr Peel stood forward as the champion of the party opposed to concession, and the members of that party mustered in strength; but the motion was carried by a majority of six. On the 2d of March the house accordingly resolved itself into a committee for the purpose of taking into consideration the Catholic claims. Mr Plunkett was prepared to prosecute his advantage, and submitted six resolutions for the adoption of the house. Their purport was, that such parts of the oaths required to be taken by persons qualifying for the enjoyment of offices, franchises, and civil rights, as merely disclaimed a belief in the speculative religious opinions of the Roman Catholics, ought to be repealed; that the word "spiritual," which occurred in the oaths of supremacy, should be declared to import merely "that the kings of this realm should govern all estates and degrees committed to their charge by God, whether they be ecclesiastical or temporal, and restrain, with the civil sword, the stubborn and evil doer;" that the act of repeal and explanation should be accompanied with such exceptions and regulations as might be found necessary for preserv-

ing the Protestant succession to the crown, and maintaining inviolate the Protestant episcopal church of Ireland and the church of Scotland. The resolutions were agreed to *pro forma*, and leave given to bring in a bill founded on them. Mr Peel declared his determination to oppose the measure in all its stages. Mr Plunkett digested his scheme into two bills, the one containing the civil, the other the spiritual arrangements, which it was proposed to pass into a law. They were read a first time, without discussion, on the 7th of March. An attempt was made on the part of the opponents to concession, aided by some discontented members of the Catholic church, to represent the measure as odious to the class of the community whose enfranchisement it contemplated, but without success. Various amendments, calculated to defeat the object in view, were proposed by Messrs Bankes, Peel, and Goulburn, but successfully combated. Sir John Newport, when moving the commitment of the bills on the 26th of March, gave notice of his intention to move their consolidation; and on the 28th his motion was submitted and agreed to. The consolidated bill, notwithstanding the strenuous opposition which it encountered from the high church party within the house, and latterly from the Catholic clergy without, passed the Commons on the 2d of April by a majority of nineteen. It was accordingly carried to the House of Lords; and read a first time without any debate, but ultimately thrown out on the 16th of April, upon the motion that it be read a second time, by a majority of thirty-nine.

The support given by the house to this effort for the relief of the Catholics, and the loud cry of the country for parliamentary reform, encouraged opposition to moot that question, upon which every rational hope of amelioration in church and state depended. Mr Lambton was first in the field. He submitted a plan of reform to the consideration of the House, the very evening that the Catholic relief bill was rejected by the Lords. The principal features of the measure which he contemplated were, the limitation of the duration of parliament to three years; the extension of the elective franchise to all persons possessing property, however small in value, which contributed to taxation; and the abolition of rotten boroughs. The attendance was thin and the debate languid, although adjourned on the first evening. It was resumed on the 17th, but abruptly terminated by a manœuvre of the ministerial party. Mr Lambton and his friends were rather late of appearing, and their antagonists taking advantage of their absence, instead of prosecuting the discussion, called for the vote, and thus defeated the wish of the reformers to go into committee. Such a stratagem was more worthy of a knot of mischievous school-boys than of men deliberating upon the interests of the empire; yet the skilful employment of the result by the ministerial press succeeded for a considerable time in alienating the public confidence from Mr Lambton, and neutralising his utility in parliament. The opposition were disappointed by this result, but not defeated. Lord John Russell re-introduced the subject on the 9th of May, in a more indefinite shape; several members having declared, on the occasion of Mr Lambton's motion, that they were ready to entertain the general question of reform, although they objected to the specific measure proposed. Lord John proposed for the adoption of the house four resolutions, declaratory of the corrupt state of the elective system; the necessity of extending the elective franchise to wealthy and populous places hitherto unrepresented; the propriety of appointing a select committee to consider the best measure of effecting this innovation; and the expediency of referring to the same committee the consideration of the best mode of proceeding against such boroughs as should in future be convicted of bribery

and corruption. The first resolution was lost by a majority of thirty-one, in a house consisting of two hundred and seventy-nine members: the others were negatived without a division. The last attempt made during the session for the attainment of a general reform, was Mr H. G. Bennet's motion for leave to bring in a bill for the better securing of the independence of parliament. His plan was to continue to the great officers of government their seats in the house, but to exclude clerks and underlings. Of fifty-one persons holding seats in the house at the pleasure of government he proposed to exclude twenty-nine. This motion was negatived like the rest. On the 10th of May, Lord Archibald Hamilton made an attempt to induce the house to pledge itself that it would next session take into consideration the state of representation in the counties of Scotland, but without success. The only instance in which the cause of reform was at all successful during the lapse of this session, was the passing of the bill for the disfranchisement of Grampound. Even this slender victory was incomplete in itself. The bill, as agreed to by the Commons, transferred the franchise which Grampound was declared to have forfeited to Leeds, vesting the electoral qualification in all the inhabitants renting houses at L.20 yearly. Lord Liverpool moved in the House of Lords, that, instead of giving two representatives to Leeds, the whole county of York should in future be allowed the privilege of returning four. The amendment was agreed to; and the House of Commons decided that the measure, even in its mutilated state, was not to be rejected.

While these two great constitutional questions were thus keenly contested, Mr Hume kept up a continual fire upon the ministerial system of finance. He opened his battery with the first introduction of the estimates. When the army estimates were introduced, he directed the attention of the house to the enormous augmentation of the numbers of the army on the peace establishment which had taken place since 1792, and the corresponding increase of expenditure; and proposed that the resolution recommended by the finance committee of 1817 of approximating the military establishment as near as possible to that of 1792, should be adopted. The motion was negatived. Nothing daunted by defeat, Mr Hume returned to the attack on the production of the navy estimates. His motion was similar to that which he had brought forward in regard to the army; and, resting upon the same principles, it was not pressed to a division. A motion by the same gentleman, on the production of the ordnance estimates, in which he urged, in addition to a statement similar to those made on the former occasions, a transgression by this department of the orders of the house, was equally unsuccessful. In his resolutions respecting a possible saving in the collection of the land and assessed taxes, he was more successful. The ministers did not dare to meet him, as they had the year before, with a direct negative; but suggested a reference to a committee, in which Mr Hume acquiesced. The chancellor of the exchequer brought forward the budget on the 1st of June. The amount of supply he estimated at L.20,018,200; of ways and means at L.20,031,569. He sought to make it appear that a reduction of ten millions had been effected on the national expenditure since 1820. Mr Hume was again at his post, and recapitulated, with new illustrations and calculations, the arguments he had already adduced in opposition to each particular estimate. He concluded by moving an address to the king, requesting that his majesty would be pleased to direct a minute investigation into the expense of the management and collection of the revenue; a careful revision and adjustment of all salaries and allowances; and the exercise of a vigilant superintendence over the expenditure of the country,

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especially in everything connected with the military establishment. The ministry, in order to avoid the disagreeable necessity of adopting a suggestion from Mr Hume, moved an amendment, differing from the original motion in nothing but its more courtly tone, and its vagueness of expression. A resolution similar to Mr Hume's was submitted to the Peers by Lord Darnley on the 2d of July, and evaded in the same manner. During the time that this extended plan of financial reform continued to be pressed upon a reluctant ministry, the country gentlemen were busy striving to shift as large a proportion of the national burdens off their own shoulders as possible. Mr Western attempted to introduce a bill for repealing the additional duties imposed on malt in 1819; and Mr Curwen succeeded in obtaining a repeal of the tax imposed on horses employed in agriculture.

All attempts to shake the attachment of the majorities in both houses to the ministry, or give such a voice to the nation as might deprive its supporters of their seats, having failed, the ameliorations in our legal institutions so warmly desired by all friends of humanity and justice made but slow progress. Their bigoted adversaries still maintained an ascendancy in the cabinet. Sir James Mackintosh brought forward three bills;—for abrogating capital punishment in certain cases of forgery, and in cases of stealing in dwelling-houses, and on navigable rivers. The first, after having been thrice read in the Commons, was thrown out, in consequence of a manœuvre of Lord Londonderry on the question that it do pass. The second and third were carried through the lower house, but thrown out in the Lords. Another attempt to humanize the criminal code was made by Mr Martin of Galway, who introduced a bill for allowing the benefit of counsel to persons accused of felony; but on the second reading it was negatived without a division. Mr Kennedy directed the attention of the house to the faulty mode of constituting juries in Scotland; but the hostility of government and the Scottish law officers to any improvement was so marked, that he forbore to press his measure for remedying the defect. Sir John Newport submitted a series of resolutions to the House of Commons, complaining of the dilatory proceedings of the commission appointed in 1815 to inquire into the state of the English courts of justice. The resolutions were negatived, the ministers taking upon themselves the defence of their nominees. Although the party in power thus strenuously opposed in parliament every modification of the laws, their adherents out of doors hesitated not to appoint officers not recognised by the constitution, to watch over the strenuous enforcement of the law of libel. An association was formed in London on the 12th of December 1820 for the purpose of suppressing seditious publications; and bills of indictment were preferred by the law agent of this body against several booksellers. Mr Brougham took an opportunity of directing the attention of the house to its proceedings; insisting strongly on the dangerous character of men associated to prosecute individuals selected at the discretion of political prejudice. He contended, likewise, that such a union had a tendency to destroy the impartiality of juries. The subject was again brought before the house by Mr S. Whitbread. No conclusion was come to; but the society, after being thus held up to public reprobation, languished and died.

The attention of the house was this year again directed to the continued distress both of the agricultural and manufacturing population. The committee appointed in 1820 to investigate the mode of striking the corn averages, reported immediately upon the sitting of parliament. In consequence of the recommendation contained in the report, a bill was introduced on the 26th of February, by which considerable changes were effected in the then ex-

isting system. Their general object was clearly to calculate the averages so as to diminish them in apparent amount; in other words, to raise the importation price. Not contented with this arrangement, the country gentlemen made another and successful attempt on the 7th of March, to obtain the appointment of a committee to take into consideration the petitions relative to the distress of the agricultural interest. The committee reported, on the 18th of June, that the agricultural suffering was mainly owing to the change in the currency; that it would decrease as contracts, and prices, and wages of labour, assimilated themselves to the new value of money; and that considerable progress had already been made towards this desirable consummation. All interference on the part of the legislature was deprecated. Mr Curwen suggested the imposition of a duty on the transfer of stock, and Mr Baring adverted to the expediency of allowing the bank to pay either in gold or silver; but neither of these gentlemen pressed the adoption of any measure. With a view to alleviate the depressed state of commerce and manufactures, committees were appointed by both houses to inquire into the regulations affecting our foreign trade, and how far benefit might accrue from modifying them. The Lords' committee reported on the 11th of April, confining its attention to the advantages likely to be derived from an extension of the Asiatic trade. All the suggestions of the report were consequently in a great measure at the mercy of the East India Company. The report submitted to the Commons by their committee related to the intercourse with the Baltic, and was followed up by a resolution declaring the expediency of diminishing the preferences given to the colonial timber trade over that from the north of Europe, allowing that of Russia and Prussia superior advantages over the timber of Norway. This paltry advance in liberality was with difficulty carried into a law. A more important step, suggested by the committee, was the leave granted by the house to introduce bills for the amendment of the navigation laws; a measure which was allowed to stand over till next session.

While these important debates were agitating the legislature and the country, the monarch was engrossed with the childish pageantry of his coronation, and pleasure excursions to Ireland and Hanover. All three entailed a great expense upon the country, and not one of them was rendered conducive to any useful purpose. Devolving upon other shoulders the cares of state, George IV. would have led a life of unalloyed ease, but for that thorn in his side, the queen. Her safety once assured, and an allowance settled upon her by parliament, she naturally ceased to have any interest for the public, which had been led to espouse her cause from a conviction of the injustice with which she had been treated, not from any personal attachment, which her character was but ill qualified to inspire. She made one last desperate effort to regain her notoriety, which was rapidly subsiding at the time of the coronation; but failing in her attempt, she was seized with such chagrin that she soon afterwards died. Her death in some measure re-awakened the national sympathy; and an attempt on the part of the ministers to interfere with an expression of respect to her remains increased the unpopularity of the sovereign.

The aspect of affairs at the commencement of 1822 was stormy in the extreme. The distresses of the agriculturists continued unmitigated; and meetings of farmers and landholders, clamorous for assistance, were held in every county. One called for corn laws, another for the abolition of tithes, and another for a reduction of the national debt. Each thought his own remedy sufficient, and refused to listen to the suggestions of others. In Ireland matters were still worse. The distress there was even more

overwhelming than in England, owing to a redundant population, and the absence of any variety of employments. The pressure of tithes, ever odious to the Irish peasant, as a tax levied for the support of a heretical church, and of an unjustly apportioned local taxation, bore down the population, and embittered their spirit. Men's minds were, moreover, even in times of prosperity, alienated by bitter theological feuds. The increasing strictness of the precautions taken by government against smuggling had driven many lawless men into the mountainous district in the northern baronies of the county of Cork, and in Kerry; and there, accordingly, the most extensive and seemingly organised devastations were perpetrated. The flame, it is true, broke out at intervals over the whole of Ireland, but in that district was its head-quarters.

Under these inauspicious circumstances parliament assembled on the 5th of February. In the House of Commons, the ministerial party, which had never quite recovered the secession of Mr Canning from office at the time of the queen's trial, was strengthened by the appointment of Mr Peel to be home secretary. In both houses its numbers had been increased by an amalgamation with the Grenville party, some of whom accepted of office.

The theme most emphatically dwelt upon in the speech from the throne, and first submitted to the attention of parliament by ministers, was the state of Ireland. Lord Castlereagh and his coadjutors had only one remedy for the disturbances of that country—coercion. Two bills were immediately introduced into the Commons, and with the most indecent haste hurried both through that house and the Peers, receiving the royal assent on the 11th of February. The first contained a re-enactment of the insurrection act, empowering any two justices to cause an extraordinary session of the peace to be held, and the justices, when assembled in such session, to the number of seven in a county and three in a city, to signify to the lord-lieutenant their opinion that the county was in a state of disturbance, assigning at the same time their reasons, and praying him to proclaim it. The proclamation which the lord-lieutenant was empowered to issue warned the inhabitants of the disturbed district after a certain day to remain within their houses between sunset and sunrise. After that day any justice of peace, or any person authorized by his warrant, might enter into any house in the proclaimed district between one hour after sunset and sunrise, and give orders for the apprehension of such of the inhabitants as were found absent. These, along with all persons found out of their abodes between the same hours, all persons having in their possession offensive arms, all persons not travellers or inmates found assembled after nine at night and before six in the morning, in any house where malt and spirituous liquors were sold, and a multitude of others, were to be tried without a jury, by a court of special sessions, to be held within seven days from the date of the proclamation, and prolonged by adjournments as long as the district continued proclaimed. Dispersing seditious papers was declared punishable by twelve months' imprisonment, and all other offences specified in the act, by transportation for seven years. This strong measure was enforced by the second bill, which suspended the habeas corpus act. The operation of both acts was limited to the first of August following. The opposition arrayed against these enactments was vehement, but not numerous. The more timid Whigs palliated their acquiescence by their confidence in the character of Lord Wellesley, who was then lord-lieutenant. Two other measures were shortly after introduced, and carried through parliament by the 11th of March. The first was an act to indemnify all persons who, since the first of November preceding, had, with a view to the preservation of

peace, but without legal authority, seized arms or gunpowder; the second imposed severe restrictions on the importation of arms and ammunition into Ireland, on the manufacturing of these articles in the country, and also on the removal of them from one place to another. The bills passed through both houses without observation.

The additional powers conferred by these acts were vigorously exercised by the Irish government. Every district in which an act of violence occurred was immediately proclaimed. The whole country was patrolled by large bodies of military and police. Special sessions were held for the purpose of putting the laws into immediate execution. At Cork alone there was a calendar of three hundred and sixty-six offenders, of whom thirty-five received sentence of death. The regular assizes soon followed, at which similar scenes were repeated. The most worthless testimony was lightly credited by terrified jurors. But all this vigilance, although it succeeded in rendering resistance to the constituted authorities less daring and systematic, failed to give peace to Ireland. The country continued in a state of feverish insecurity, and violence extended its sphere of action. As the spring advanced, however, and the nights shortened, outrages diminished in number; and a famine which ensued, accompanied in many places by a virulent typhus fever, the result of bad and insufficient diet, effectually tamed the spirit of insubordination. The humanity of England was awakened, and great exertions were made to relieve the sufferers, but not until their misery had almost exceeded what human nature, if untried, could be conceived capable of enduring.

On the 8th of July a bill was introduced by Mr Goulburn, prolonging the duration of the insurrection act, and the suspension of the habeas corpus, till the 1st of August 1823. A feeble opposition was offered to it. Only seventeen voted against the principle of the measure in the Commons, whilst in the House of Lords it was suffered to pass almost without remark. A more permanent measure of coercion was introduced at the same time. By the constabulary act, the lord-lieutenant was empowered to appoint, by warrant under his own hand, a chief constable for every barony, or division of a barony; and to require by his proclamation the county magistrates to appoint constables and sub-constables at the rate of sixteen to a barony. If the magistrates did not obey the proclamation within fourteen days, the lord-lieutenant was to appoint the constables himself. The chief constable was to have a house provided for him, and a salary not exceeding L.100 per annum; the salaries of the others were not to exceed L.35 a year. The lord-lieutenant was likewise authorized to nominate superintendents or inspectors of the chief constables and constables, with salaries of L.500 a year. By a clause of this act, his lordship was authorized, upon application from seven or more justices, to appoint a resident magistrate for any district, possessing all the powers of a justice of the peace, bound not to leave his district except in the prosecution of his official duty, and obliged to make monthly returns of the state of the country within his jurisdiction. This official was to enjoy an annual salary not exceeding L.500, and a house and furniture not exceeding L.200. A keen opposition was offered to this enactment. It was alleged that it entailed an enormous expense on the country; that it was unconstitutional, and would prove ineffective. These arguments received additional weight from the quarter whence they came. Mr Charles Grant, a strenuous partizan of ministers, and who had governed Ireland for three years with great prudence and popularity, was the person who urged them with most energy. The utmost concession, however, that could be wrung from ministers was the omission of some of the most obnoxious details.

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Notwithstanding all these rigorous enactments, the insurrectionary spirit began to show itself again as the winter came on. It was, however, kept within narrow limits, and the clamour of Orange partizanship effectually drowned its noise. A revision of the magistracy had been begun, and almost completed during Mr Grant's secretaryship. The task was one of infinite labour, and its completion required both time and caution. The new list was completed by the end of 1820, and the commissions issued. The change proved great. In seven counties alone no fewer than two hundred noblemen and gentlemen had writs of supersedeas directed to them. The whole fury of these parties was directed against Lord Wellesley. On the 4th of November his lordship yet further offended the zealots of the Protestant ascendancy, by his prevention of the annual insult offered to their Catholic countrymen. The press teemed with libels against his person and government; and when he appeared in the theatre on the 14th of December, he was received with every expression of dislike, and some manifestations of violence.

Amid the anxious discussions on these local disturbances and their remedies, which engrossed the legislature, the important question of a general reform of the representative system continued to be forced upon its attention. Petitions on that subject were presented from most of the large towns and important counties of the empire. On the 29th of April, accordingly, Lord John Russell moved in the Commons, "that the present state of the representation of the people in parliament required the most serious consideration of the house." His lordship did not propose any specific plan, but indicated one or two which might be worthy the attention of the house. Mr Canning took upon himself the burden of opposing the motion, and, referring to his approaching departure for India, concluded in these words a tissue of splendid declamation. "That the noble lord will carry his motion this evening, I have no fear; but with the talents he has shown himself to possess, and with, I sincerely hope, a long and brilliant career of parliamentary distinction before him, he will no doubt renew his efforts hereafter. Although I presume not to expect that he will give any weight to observations or warnings of mine, yet on this, probably the last opportunity which I shall have of raising my voice on the question of parliamentary reform, while I conjure the house to pause before it consents to adopt the proposition of the noble lord, I cannot help conjuring the noble lord himself to pause before he again presses it upon the country. If, however, he shall persevere, and if his perseverance shall be successful, and if the results of that success shall be such as I cannot help apprehending, his be the triumph to have precipitated these results, be mine the consolation, that to the utmost and latest of my power I have opposed them." Mr Canning seems to have had a prophetic consciousness of the approaching dissolution of that system to which he had yoked himself; a consciousness justified by the division. Only a hundred and sixty-four voted for Lord John's motion, and two hundred and sixty-nine against it; but the ranks of the minority were swelled by the heirs of the noblest families in Britain, whose talents and energy promised an immense accession of force on every future occasion. This attack was followed up on the 24th of June by another, in the form of a resolution, proposed by Mr Brougham, "that the influence of the crown is unnecessary to the maintenance of its due prerogatives, destructive of the independence of parliament, and inconsistent with the good government of the state." The mover intimated, on the conclusion of his speech, that he considered his resolution, if adopted by the house, as nothing less than a pledge to parliamentary reform. A languid debate ensued, which terminated in a

negative being put upon the motion by a large majority. The party attached to parliamentary reform in Scotland received this year an accession in consequence of the contemptuous indifference with which Lord Archibald Hamilton's measure for removing the abuses which had crept into the administration of royal burghs was refused a hearing.

The only attempt made this year in favour of the Catholics was Mr Canning's bill for the admission of Catholic peers to the right of sitting and voting in the House of Lords. The idea of this measure was exactly suited to the calibre of Mr Canning's mind, showy and unsubstantial. The bill passed the Commons, but was of course rejected by the Lords.

The most serious opposition against which ministers were this year called to contend, was in the matter of finance. Mr Hume renewed his detailed attacks upon every item of the estimates and budget, and, although he failed in effecting any immediate change, kept alive the public attention, and rendered government more cautious and attentive. In other efforts Mr Hume and his coadjutors were yet more successful. Ministers announced, as the whole amount of their projected alleviation of national burdens, the repeal of the malt tax, which produced nearly a million and a half per annum. With a view to force them to do what they refused to undertake spontaneously, Mr Calcraft on the 28th of February brought forward a motion for the progressive repeal of the salt tax, by taking off one third of the duty in each of the three succeeding years. The motion was lost by a majority of only four in favour of ministers. Next day they received a still more effectual lesson. In a discussion of the expenses of the admiralty office, Sir M. W. Ridley moved a reduction of two thousand pounds in the vote, the amount of the salaries enjoyed by the two junior lords of the admiralty. These two useless offices were consequently abolished by the votes both of Lords and Commons, although ministers continued to defend them vehemently to the last. A similar defeat was sustained by government on the 2d of May, when, in despite of every exertion, an address to the king was carried, praying him to abolish the office of one of the postmasters-general. In its other attempts to enforce retrenchment the opposition was unsuccessful; yet so well had its partial success worked upon the apprehension of ministers, that the amount of taxes repealed during the course of the session, notwithstanding their original declaration, may be estimated thus:—

Annual malt duty.....	£1,500,000
Salt tax.....	1,300,000
Leather tax.....	300,000
Tonnage duty.....	150,000
Irish window and hearth taxes.....	250,000
	£3,500,000

But the severest wound received by the financial reputation of ministers was inflicted by the hands of the chancellor of the exchequer. Mr Vansittart undertook two great financial operations; the one with a view to diminish permanently the charge of the public debt, the other to diminish part of the annual expense of government. The first was the reduction of the navy five per cents. to four per cent. Some objections were stated to the manner in which this object was proposed to be attained; but the advantage was too apparent, and Mr Vansittart's plan obtained the assent of parliament. His other scheme, however, proved a singular failure. The amount of naval and military pensions was about five millions annually. The chancellor of the exchequer proposed to provide for this branch of public expenditure by granting to certain contractors a fixed annuity for forty-five years; in return for

which they were to pay into the public treasury such a sum in each of the forty-five years as should upon calculation be sufficient to pay the pensions that should then be in existence. The scheme was, in other words, to contract *now* for annual loans to be advanced to government in each of the next fifteen years, and to be repaid by a gradually increasing annuity, to commence at the end of fifteen years, and continue for thirty years from that time. This new mode of loan was improvident and grossly unjust, as tending to throw the whole load of the burden on posterity. It was attacked by Mr Ricardo and Mr Brougham with the most biting sarcasm, but nevertheless most pertinaciously forced, with the whole strength of the ministerial phalanx, through both houses. A fate awaited it, however, compared with which Mr Brougham's withering sneer was gross flattery: not one capitalist could be found to engage in the contract. The prudence of the monied men saved the minister from the effects of his own imbecility. He again submitted his scheme to the House of Commons in a form so modified, that the only objection to which it was liable was its intricacy and confusion. This, however, was considered necessary to the honour of the financier.

The continued distress of the agricultural interest occupied the attention of parliament to a yet greater extent than in the preceding year. At the commencement of the session Mr Brougham submitted a resolution to the House of Commons, declaratory of the necessity of affording relief to the agriculturists by the removal of taxes. The motion was negatived, upon the declaration of Lord Londonderry that ministers had a plan of their own to propose. This plan his lordship developed on the 15th of February, when moving for the production of some financial documents. The remedies which it contemplated were the repeal of the malt-tax, already noticed, and a loan to the agricultural interest by means of exchequer bills. In order to clear the way for an exposition of this measure, the marquis moved, on the 18th of February, for the renewal of the agricultural committee. This body laid its report before the house on the 1st of April, and the same day three different schemes were submitted for the relief and protection of farmers and landlords. Lord Londonderry proposed a loan of a million to the agriculturists by means of exchequer bills, under certain circumstances; the opening of the ports to the importation of foreign grain whenever the average price of British corn exceeded a specified sum; and the subjection of the foreign grain thus admitted to certain duties. Mr Ricardo proposed no loan, but the opening of the ports, when British corn reached a specified price, to foreign grain, subjected to certain duties, and a bounty or drawback on the exportation of corn to foreign countries. Mr Huskisson's resolutions contained a narrative of the state of the British agriculturist, from which the proper method of coming to his assistance was logically deduced. His plan was a gradual repeal of the prohibitory corn laws, and the establishment of a permanently free trade in foreign grain, subject to the imposition of moderate duties. Lord Londonderry subsequently withdrew his proposal to extend a loan to the agriculturists. Mr Ricardo withdrew his resolutions, two of them, having reference to the scale of duties upon imported grain, and the drawback upon such as should be exported, having been adopted by Mr Huskisson. The final discussion in the Commons took place on the 7th of May. Sir Thomas Lethbridge proposed a series of protecting duties, including almost every species of agricultural produce, down to apples and pears, which received a very feeble support from a small minority. The conjoined resolutions of Mr Huskisson and Mr Ricardo were likewise negatived. Lord Londonderry's resolu-

tions were agreed to; and a bill founded upon them passed into a law, against which Lords Lauderdale and Erskine entered a protest.

The commercial interest likewise attracted a considerable portion of the attention of the legislature, although, as there was on this point less difference of opinion, the debates were less noisy. The mania for speculating in foreign funds, which had begun to show itself so early as 1817, reached its height, and experienced its first check, this year. The Colombian bonds received the first shock. The depression of Spanish stock followed. A series of panics convulsed every money market in Europe. The price of all foreign stocks fell rapidly, and thousands were ruined or impoverished by the change. Nevertheless it appeared, by returns from the manufacturing districts, procured by the secretary for the home department, and laid upon the table of the House of Commons, that the rate of profits, although low, was sufficient to induce persons to enter into trade; and that in most places the operatives were fully employed. The plans announced by Mr Wallace in the preceding session of parliament, for benefiting the commerce of the country, were this year carried into effect by means of five acts. The first repealed all the acts affecting navigation and commerce passed by British parliaments previous to the enactment of the navigation laws under Charles II. The second repealed the third clause of the navigation law, which enacted, that no goods of the growth, product, or manufacture of Asia, Africa, or America, shall be imported into England, but in such ships as do truly belong to English people, and are navigated by a master and three parts English mariners; the fourth, which enacts that no goods or commodities of foreign growth, production, or manufacture, which shall be brought into England otherwise than in ships built and navigated as above, shall be shipped from any other place but the place of their growth, production, or manufacture, or from those parts where they can only be or usually have been brought; the eighth, which relates to the importation of goods from Turkey and from Russia; the twelfth and fourteenth, which relate to the importation of goods from the Levant, from Spain, and Portugal, and their dependencies; and all acts from the time of Charles II. downwards, which stood in the way of the provisions contained in the third act. This statute established the principle of the old navigation laws, but with important modifications. Foreign ships were allowed to bring enumerated goods from any port in Europe, provided the ship belonged to the port in question. The ships of Holland, so long the objects of a pitiful jealousy, were allowed the same privileges with those of the rest of Europe. Goods of any country or place in South America or the West Indies, belonging to, or which had belonged to Spain, might be imported direct from the place of growth, in ships of the country. No importation was permitted from any port where British ships were not admitted. The fourth act regulated the trade between the British possessions in America and the West Indies, and other places in America and the West Indies; and the fifth between the same colonies and the rest of the world. The object of the two last-mentioned laws was to benefit the West India planter. An attempt was also made by government to induce the East India Company to permit ships measuring less than three hundred and fifty tons to participate in the private trade to India. But the Company stood upon its charter, and refused to comply unless the full rights of British registry were extended to India built ships, and East India sugars for home consumption admitted on equal terms with those from the West India colonies. Mr Hume drew the attention of the Commons on several occasions to the exorbitant consular fees, which

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operated as a heavy tax upon merchandise; and government at last declared that the board of trade was framing a law to alleviate this evil.

The death of Lord Londonderry, which happened shortly after the prorogation of parliament, whilst the king was absent in Scotland, was eventually the cause of an essential change in the system pursued by the British government. Lord Liverpool entertained very liberal opinions in matters of commercial and international policy. His sentiments were in general shared by such members of the Grenville party and of Mr Canning's friends as were in office. Mr Peel was a minister of comprehensive mind, extensive acquirements, and a disposition that could adapt itself to associates of any principles. The liberal inclinations of these men were completely neutralized by the bigoted ultra-toryism of Eldon, Londonderry, and Wellington, with their retainers Bathurst, Westmoreland, Maryborough, Sidmouth, and Vansittart. Of this clique, Londonderry, by his plausible manners, ready flow of language, and relentless pertinacity of purpose, was the animating spirit. After his death it offered to its more enlightened associates no resistance beyond that of mere *vis inertiae*. In opposition to its wishes, and in opposition to the king's personal dislike, Lord Liverpool installed Mr Canning into the office left vacant by the death of the Marquis of Londonderry. The new foreign secretary was further strengthened in the commencement of 1823, by the resignation of Mr Vansittart, to whose financial reputation the last session of parliament had given the finishing stroke, upon receiving a peerage and the sinecure chancellorship of the duchy of Lancaster. He was succeeded as chancellor of the exchequer by Mr Frederick Robinson. Mr Huskisson was at the same time appointed president of the board of trade; his seat in the cabinet he did not receive till a later period. A government of force had been found not to answer, and one of specious pretence was now to be tried.

The line of policy observed by government during the continuance of Mr Canning, Mr Robinson, and Mr Huskisson in office, was such as to conciliate the confidence of a large body of the people. It was indeed a material improvement upon that persisted in by Lord Londonderry and Mr Vansittart; and the nation, long unaccustomed to such a parade of liberality on the part of ministers, conceived an exaggerated idea of its excellence. To this circumstance, and to the more determined and better organized efforts of the Catholics of Ireland, which for some years shared, with questions of commercial arrangements and foreign policy, almost the exclusive attention of the public, we are to attribute the fact that, subsequent to the year 1823, the very name of parliamentary reform seemed for a time to have been forgotten. During the early part of the session of parliament in this year, the table of the House of Commons was loaded with petitions for reform. On the 24th of April Lord John Russell moved that the state of parliamentary representation required the most serious consideration of the house. The motion, however, was negatived. Lord Archibald Hamilton submitted a series of resolutions to the house on the 2d of June, descriptive of the state of county representation in Scotland, and containing a pledge of early redress. But these were negatived by a narrow majority. Nevertheless we hear no more in parliament for several years of reform, except in some futile attempts to obtain an amendment in the representation of Edinburgh.

The topic on which the discussions in parliament for the most part turned during the session of 1823 were the relations of continental Europe. Mr Canning's system was to record a protest against the doctrines of the allied sovereigns, and to endeavour to prevent any attack upon

Spain on their part, but if possible to avoid war. A few days after Mr Canning's acceptance of office, the Duke of Wellington left London for Vienna. The topic of deliberation at the congress appointed to be held in that city was the existing state of affairs between Russia and the Porte. That question having been disposed of, the members of the congress, with the exception of the British minister, were to have adjourned to Verona, there to sit in judgment on the Italian peninsula. It was the wish of Mr Canning that the absence of the English minister from Verona should mark England's refusal to interfere with the independence of the Italian states. The Duke of Wellington, however, being detained by indisposition, did not reach Vienna until a few days before the proposed adjournment, and the urgency of affairs rendered it advisable that he should follow the sovereigns to Verona. He had learned from a conversation with M. de Villèle at Paris, that it was the intention of the French ministers to call upon the congress to come to some decision on the relative positions of France and Spain. By Mr Canning's instructions the Duke of Wellington opposed most vigorously any interference on the part of the allied sovereigns with the internal arrangements of Spain. This unexpected opposition checked them in their arbitrary projects; and the result was, that they abstained from a combined demonstration, resolving to assist France, in case of any aggression upon the part of Spain, of any outrage on the person of the king, or of any attempt to change the dynasty of that kingdom. With this resolution the congress separated, and Mr Canning's negotiations for preserving the peace of Europe and the principle of national independence were adjourned to Paris.

The British envoys in that capital were amused by different pretences, from the termination of the congress in November 1822 till the 7th of April 1823, when the Duke d'Angoulême crossed the Bidassoa. According as timid or rash counsels prevailed, the French ministers expressed pacific or warlike intentions; but whatever their expressions might be, French gold and French intrigue were incessantly employed in stirring up factions in Spain. The reasons for declaring war, ultimately published by France, however frivolous, rested the justification of the matter upon a national quarrel alone, and thus precluded the interference of Britain. The popular feeling in England ran very high in favour of Spain; but the indifference manifested by the body of that nation towards the constitutional cause reconciled the country to the pacific policy of ministers.

The most embarrassing circumstance which attended these negotiations was the necessity of a serious remonstrance with the Spanish ministry respecting certain aggressions perpetrated on British subjects in consequence of the disputes between Spain and her colonies. The constitutional government was as averse to the recognition of colonial independence as the old despotism. Britain had, however, acquired, during the Peninsular war, a right of commerce with the Spanish South American possessions, and this she was not inclined to relinquish; while British vessels had been captured by cruisers carrying Spanish colours, under the pretext that they had infringed a nominal blockade of the provinces in a state of insurrection. After various ineffectual representations, the British ministry assumed the right of redressing themselves, and sent notification of the fact to the Spanish court. It was a matter of great delicacy to press for the recognition of rights which that government could not fail to grant with reluctance, at a moment when England was the only barrier to which it could look against the encroachments of the holy alliance. The Spanish ministry, however, frankly admitted the justice of the procedure on

of the part of England, and the intercourse between that country and Spanish America was allowed to remain upon the footing that had been established for years without any complaints on the part of the mother country. The success of the French army rendered it expedient to adopt yet more decided steps. In the month of July a number of respectable merchants connected with South America applied to the foreign office, requesting the appointment of commercial agents to protect British interests in that quarter of the world. Their prayer was granted, and consuls and consuls-general appointed to the principal stations in Mexico, Colombia, Peru, Chili, and Buenos Ayres.

The system adopted or intended to be adhered to by government in these questions of foreign policy was explicitly declared in the speech from the throne. The only complaint urged against the declaration was its coldness. Mr Canning was not at that time in parliament. Lord Liverpool's explanation of the views of ministry, and Mr Brougham's indignant denunciations of the nefarious projects of the continental sovereigns, rendered his absence less felt. The Spanish question was not immediately urged by opposition, it being understood that negotiations were still in progress. The diplomatic papers relative to these transactions were submitted to both houses on the 14th of April; Lord Liverpool and Mr Canning seizing the opportunity of addressing to their respective houses explanatory statements of their conduct. The opposition leaders intimated their opinion that the explanation given by ministers was by no means satisfactory; but more minute discussion was reserved for a future occasion, when members should have had time to examine the correspondence. Before that discussion occurred, Lord Althorpe moved for leave to bring in a bill for the repeal of the act prohibiting British subjects from engaging in foreign military service, or fitting out in his majesty's dominions, without the royal license, vessels for warlike purposes. It was argued in opposition, that, under existing circumstances, such an alteration of the law would operate exclusively in favour of Spain; and by this frivolous argument a majority of the house was influenced to negative the motion. The main question of the correctness of the ministerial measures was resumed both by the Lords and Commons a few evenings later. In both houses an address to the king was moved, expressive of regret that his majesty's ministers had not adopted a more dignified tone, and supported with more energy the cause of Spain. The universal sentiment was so apparently in favour of ministers, that the opposition endeavoured to avoid coming to a division in the House of Commons. The ministerial members, however, succeeded in forcing the house to divide, by which means they gave to the lately re-constructed ministry the sanction of an overwhelming majority.

The financial operations of the government increased the popularity which its avowed secession from the interests of the holy alliance had gained for it. The increase of the revenue enabled the new chancellor of the exchequer to commence his career with a spontaneous alleviation of national burdens. In addition to this circumstance, Mr Robinson's lucid statement of accounts, and explanation of the measures contemplated by government, contrasted most favourably with the complicated and imbecile attempts of his predecessor. Mr Robinson's calculations showed a surplus of seven millions, five of which he proposed to appropriate to the reduction of the debt, and two to the remission of taxes. The latter object was accomplished by the introduction of the necessary bills. In order to secure the former, Mr Robinson laid before parliament a bill, the purport of which was to apply an annual sum of five millions as a sinking fund, and at the same time materially to simplify the superfluous machinery

with which former sinking funds had been encumbered. Mr Maberly proposed to substitute for a sinking fund, which he disapproved of as illusory, an extinction of four millions of three per cent. stock in the course of seven years, by the redemption of the land tax. It was objected that this project, as involving a necessary diminution of revenue, was totally nugatory; and it was accordingly rejected. Mr Hume fought hard for further reductions of the national burdens; but such was the popularity of ministers, that he met with less support than he had experienced on former occasions. His motion for censure against the ministry for appointing a lieutenant-general of the ordnance after that office had been declared unnecessary by the report of commissioners, was pressed to a division by Mr Canning, who was dissatisfied with the possession of power if not allowed to enjoy its parade, and negatived by a great majority.

Intent upon winning golden opinions from all sorts of men, ministers exerted themselves to secure the rejection of Sir James Mackintosh's resolutions for the improvement of the criminal code, only to introduce bills of their own tending professedly to the same end. The resolutions introduced by Sir James were nine in number, and their purport was to declare the expediency of abrogating the punishment of death in the cases of most flagrant hard-ship; of substituting in these cases transportation for life or a term of years, or imprisonment with or without hard labour at the discretion of the judge; of making provision that sentence of death should not be pronounced in cases where there was no expectation of its being carried into effect; and of doing away with the forfeiture of goods and chattels in cases of suicide, and putting an end to the indignities offered to the remains of the dead in cases of suicide and high treason. The acts introduced in the course of the same session under the auspices of government, and passed, contained provisions to the same effect, with some concessions to vulgar prejudice in the treatment of the remains of suicides. In the department of civil law some amendments were introduced into the law regulating the relations of agent and principal; a commission was appointed to inquire into the forms of process in the courts of Scotland, and into the course of appeals from the court of session; a resolution was adopted by the House of Lords to devote five days of the week instead of three to hearing appeals; and some modifications of the law for preventing clandestine marriages were wrested from its reluctant propounders. Every attempt to obtain an amendment of the court of chancery proved unavailing. The dogged obstinacy of Lord Eldon, and the unwillingness of the ministry to admit the existence of abuse in one of their own offices, proved insuperable obstructions.

The conduct of ministers towards Ireland was far from being marked by the same eagerness to conciliate popular affection. The violent conduct of the Orangemen necessarily embittered the spirits of the opposite faction, and acts of violence occurred even more frequently than before. Under these circumstances Lord Wellesley found himself called upon to apply for a continuation of the insurrection act, which was conceded by parliament. This anxious moment was selected by Mr Canning to hang coldly back for the first time when the question of the Catholic claims was stirred. He expressed himself averse to their discussion at that time. Mr Plunkett, however, insisted upon bringing them before the house on the 17th of April. On that day Sir Francis Burdett and several other friends to Catholic concession declared that the annual discussion of the question was a mere farce, from which the honest advocates of emancipation ought henceforth to withdraw. Mr Brougham indulged in a strain of indig-

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nant invective that stung Mr Canning beyond the power of maintaining a parliamentary appearance of equanimity, or even the decency of polished society. Mr Plunkett insisting upon bringing forward his motion, Sir Francis and many other opposition members rose and left the house. The debate was soon adjourned, and not renewed during the course of the session. In the House of Lords the Duke of Devonshire endeavoured to excite attention to the condition of Ireland, but in vain. In the House of Commons Mr Brougham called for investigation into the gross inequality of the Irish law wherever Catholic and Protestant were opposed, and to the yet more oppressive mode of its administration; but the house refused to entertain the question. Mr Hume exposed the iniquity of the church establishment, but could scarcely obtain a hearing. Ireland perceived that government was deaf to her wrongs, and England, won by the graceful and conciliatory manners of that government, careless of her grievances. A conviction began to gain ground that the country must help herself. And in the course of a few years, this sentiment animating an organized body, impelled by the restless activity of an agitator of high talents, wrung from a reluctant government the boon which had so long been prayed for humbly and in vain.

The affairs of the colonies and other dependencies excited this year more than the usual share of attention. An act was passed, establishing courts, and making other regulations for the administration of justice in New South Wales and Van Diemen's Land. A bill for remedying abuses in the administration of justice in Newfoundland was announced by ministers as in preparation. A strenuous effort was made on the part of the East India merchants to obtain an equalization of the duties imposed on the sugars imported from Hindustan, and those which were the growth of the West Indian colonies; but it was defeated by the exertions of the planters. But the measure most important, both in regard to the test it afforded of the progress of liberal opinions, to the consequences it has already produced, and the still greater results it must ultimately lead to, was the ministerial circular of the 24th of May, relating to the treatment of slaves in the British colonies. This document followed up the resolutions adopted by the House of Commons on the 15th of the same month at Mr Canning's suggestion. The resolutions declared the anxiety of the house that immediate measures should be adopted for securing such a gradual improvement of the slave's character as might render safe his ultimate admission to participation in the civil rights and privileges of other classes of his majesty's subjects. The circular commanded the abolition of the punishment of flogging in the case of females, and forbade the carrying of whips on the field in the crown colonies. Enactments to the same effect were recommended for the adoption of the legislative bodies of the chartered colonies. The burst of indignation in the sugar colonies was violent and unanimous. Jamaica spoke of asserting its independence. In Barbadoes, the chapel of a missionary suspected of having transmitted unfavourable accounts of the treatment which the slaves experienced at the hands of the planters was demolished, and the clergyman himself obliged to abscond. In Demerara the promulgation of the order in council was deferred, and all knowledge of it attempted to be withheld from the negroes. Some vague surmises having spread among them, the mysterious silence of their masters excited the most unreasonable expectations, and hope deferred precipitated them into insurrection. The planters in their blind fury accused the missionaries of exciting a revolt which had been caused solely by their own illegal and unwise proceedings. A court-martial convicted Mr Smith, one of the Wesleyan clergymen, in the face of the

clearest exculpatory evidence. They did not dare to inflict their unjust sentence, but the unhappy martyr died in prison before the news arrived that the king had rescinded his condemnation.

The policy of government, liberal in the highest degree when compared with what the nation had been accustomed to, blinded men to its defects. The brilliant and somewhat gaudy eloquence of Canning strengthened the charm. His speech delivered at Plymouth in October completed his achievement. The splendid diction and imagery with which he adorned his development of the system adopted by himself and his colleagues carried away all who heard and all who read that magnificent oration. A palpable object to be attained, one of the most winning appearance, seemed to be placed within their view, nay within their reach. They soothed themselves with the idea that the honour to be gained would be shared by themselves. They forgot that nothing beyond fair words had been afforded to the falling constitutional governments of the Continent; that the reduction of national burdens so ostentatiously paraded had left them much as they were; that the sister island remained convulsed by faction, and robbed of her rights. All these they forgot and forgave for the sake of a few fair promises. Castlereagh had endeavoured for years to tame the spirit of the country by whips and dungeons, but in vain. Canning sung its stern resolves to peace in the course of twelve months. At the expense of slight concessions, a corrupt, expensive, and oppressive oligarchy had renewed its lease of power for an indefinite term.

During the year 1824 ministers continued, by perseverance in their new sprung liberality, to grow in the good graces of the nation. The opposition found it extremely difficult to muster a respectable minority. Attempts to attach to government the stigma of having played a double game with the Spanish constitutionalists, and given underhand encouragement to the French, were successfully repelled. Calls for an acknowledgment of the independence of the South American states were answered by the declarations of Lord Liverpool and Mr Canning, that to all useful intents they had been declared independent. They were allowed the privileges of free states under the new navigation act, and consuls had been appointed at their most important maritime towns. A formal acknowledgment of independence could be made only by the power which claimed dominion over another. Ministers therefore contended that one thing only remained to be done, namely, the opening a diplomatic intercourse with these countries; but the power of deciding at what period this step ought to be taken, they maintained, was unquestionably the prerogative of the crown. Parliament declared itself satisfied with these reasons; and a further declaration by Mr Canning, that government had refused a second and urgent application to become a party to a new congress, made the walls of the House of Commons ring again with applause.

Notwithstanding the caution with which ministers avoided any express pledge to recognise the independence of the rising states in the new world, active preparations were making for paving the way to such a step. So early as the end of August 1823 the diplomatic agent of the United States in England had been sounded as to whether "the moment had not arrived when the governments of Great Britain and the United States might come to some understanding with each other on the subject of the Spanish American colonies; and whether, if they could arrive at such understanding, it would not be expedient for themselves, and beneficial for the world, that the principles of it should be clearly settled and plainly avowed." The American envoy did not feel himself authorized to enter, on the part of his government, into any ex-

of press understanding on the subject. Mr Canning next turned to the French ambassador, with whom he opened a conference in October of the same year. The reply of this diplomatist was evasive and unsatisfactory, and seems to have fixed the British ministers in the resolution to wait no longer for the co-operation of any other power. In fulfilment of the promise made to the South American traders, consuls were dispatched to all the principal seaports within the Spanish provinces on that continent and Mexico. Commissioners were at the same time dispatched to Colombia and Mexico, with directions to report on the political state of these countries. The measures of the British government were precipitated by the urgency of opposition, by the reluctance manifested on the part of France to withdraw her troops from Spain, and by the intelligence which arrived early in 1824 of the preparatory steps taken by the president and congress of the United States towards recognising the independence of South America. Towards the end of July Mr Parish was dispatched to Buenos Ayres, intrusted with powers to negotiate a commercial treaty with that state, in the contingency of the government continuing to afford a reasonable prospect of being able to maintain its authority. On the 14th of December it was determined to recognise forthwith the independence of Colombia and Mexico; and by the first day of the year 1825 instructions and full powers had left the coasts of England, and the ambassadors of the allied courts received intimation that measures for recognising the independence of the three most powerful of the new states of Spanish America had been taken, past recall, by the British government.

Great Britain might in the year 1824 be regarded as emancipated from the false position in which, as a free and commercial nation, she had long found herself entangled. The good work was carried on by the adoption of several important measures both in and out of parliament. The first was the removal of certain stoppages and impediments to a free internal circulation. An act passed in the former session for repealing some, and providing for the progressive discontinuance of other duties to which the manufacturers of Great Britain and Ireland respectively were subject, on their importation from either country into the other, had been found so beneficial, that all the duties left in existence were repealed. Next in importance was the measure introduced by Mr Huskisson for placing the home silk manufacture on a more natural basis, by lowering the duty on raw silk, repealing the bounty on the exportation of silk goods, and substituting a duty of thirty per cent. on the importation of foreign silk manufactures. The interests of the operatives received also a share of legislative attention. The old laws against combinations of workmen for the purpose of regulating the price of labour and the hours and manner of working, were abolished by an act which denounced severe punishments against those who should attempt to influence or overawe by violence or intimidation. The laws against the emigration of artisans were likewise repealed. An act was passed of the greatest consequence to commercial dealings, establishing a uniformity of weights and measures, to commence from the 1st of May 1825. A bill for the repeal of the usury laws, a measure even more vitally important than any we have now enumerated, was thrown out by a manœuvre; its opponents having moved that it be read that day six months, at a late hour, when many of the supporters, expecting no further division, had left the house. While the legislature was thus employed, the executive was busy giving a wider extension to the system of reciprocity in commerce. Commercial treaties with Portugal and the United States of America, including this reciprocity arrangement (not however extending to the colonies), had existed

since 1810 in the case of the former nation, and 1815 in that of the latter. A similar convention was concluded with Prussia in the April of the year the occurrences of which we are now narrating. The next arrangement was with Sweden. It was at first effected without treaty, and matters remained in this unauthenticated condition till 1826. A convention for reciprocal equality, to endure for ten years, was concluded with Denmark in June. In May the kingdom of Hanover, and in October the duchy of Oldenburg, were admitted to the footing of reciprocity by an order in council. France and the Netherlands adhering to their impositions upon British vessels, were subjected to retaliation.

Government continued to advance with a hesitating and timorous step along the path of legal reform, into which it had reluctantly been forced. The reversal of attainders of several noble Scottish families may be viewed as falling under this head, but was a measure of little general importance. The different bankrupt laws were consolidated into one act, which, however, never received effect, a new enactment having been found necessary before the time arrived at which it was to have come in force. An attempt to procure for persons accused of felony the benefit of counsel was again defeated by the technicality of lawyers and the bigotry of the country gentlemen. The utmost attempts of the friends of law reform could this year procure nothing more than the appointment of commissioners to inquire into the proceedings of the court of chancery. The commission consisted of the chancellor, master of the rolls, and vice-chancellor, together with some masters in chancery, barristers, and members of parliament. From such a body nothing was to be expected.

The financial arrangements of ministers encountered little opposition. The revenue of the preceding year had exceeded the expenditure by L.6,718,985. From this it was necessary to deduct L.5,000,000, the sum set aside for the gradual diminution of the national debt. The surplus immediately available was L.1,718,985. Ministers anticipated an additional surplus of L.1,052,076 during the current year. This excess of income over expenditure was accounted for partly by retrenchment and partly by savings in management. Various items of charge which intercepted a part of the revenue in its progress to the exchequer were reduced. A saving of one half per cent. on the interest of the debt was effected. The bounties on the whale and other fisheries were allowed to expire. Under these favourable circumstances, and with a prospect of their continuance, ministers felt themselves authorized to commence a system of alterations in the commercial and fiscal regulations of the country. They proposed to begin by putting rum, in regard to the duty with which it was chargeable, on a level with spirits produced by British distillation. The duty on coals and wool was diminished. The alteration on the laws regulating the silk trade, which has already been adverted to, was the last measure proposed for immediate adoption. The total reduction thus effected upon the national burdens was:—

Rum.....	L.150,000
Coals.....	100,000
Wool.....	350,000
Silk.....	462,000

L.1,062,000

The relief was kept within the limits of the fund which afforded the means of granting it.

Ireland continued to experience but a small share of this conciliatory policy. Although disturbances had in a great measure ceased, the insurrection act was again renewed. The claims of the Catholics continued to be urged with increasing feebleness, and operated with additional

Reign of George IV. inveteracy. Committees were demanded both in the Lords and Commons for investigating into the state of Ireland. Ministers, however, evaded the inquiry by limiting it to the nature and extent of the disturbances that had prevailed in the districts of Ireland subject to the operation of the insurrection act. At a subsequent period of the session, Mr Hume moved "that it is expedient to inquire whether the present church establishment of Ireland be not more than commensurate to the services to be performed, both as regards the number of persons employed, and the incomes they receive." In a house of two hundred and thirty-two, only seventy-nine members supported the motion. This coldness had the good effect of confirming Ireland's resolution to rely upon herself. The Catholic Association now began to assume a bolder tone, extend its connections and operations, and take decided measures. Its members held regular sessions in Dublin, constituted themselves the medium of communication between Ireland and parliament, ordered a census of the population to be taken, and appointed collectors in every district for the receipt of the "Catholic Rent." Mr O'Connell may be regarded as the effective founder and organizer of this body. The violent and theatrical character of many of its proceedings cannot be denied; but it had the effect of giving concentration, and a rational aim, to the angry efforts of the oppressed Irish. It at once added a fresh energy to their demands for redress of grievances, and withdrew from them the temptation to illegal and atrocious acts of vengeance. Beneath its influence, and the restraining force of the new constabulary, outrage subsided to such a degree, that shortly after the close of the session the operation of the insurrection act was suspended in several of the disturbed districts. The clamours of Protestant and Catholic zealots were loud and bitter, but they abstained from personal violence. Increased tranquillity, the loosening of the restrictions upon commercial exertions, and a limited but certain increase of the means of education, shone through the troubles of Ireland like the first dull beams of a tempestuous day-break.

The West India colonies still continued in an unsettled state. A numerous military establishment maintained quiet in Demerara. Such, however, was the malignant spirit of the planters, that a missionary who had been heard to speak favourably of Mr Smith was obliged to quit the colony. In Trinidad the regulations of the order in council were submitted to under protest. In Barbadoes a bill for admitting the evidence of slaves in certain cases miscarried, and Mr Canning's plans were contemptuously neglected. In Dominica the governor recommended to the legislature the incorporation of the whole of the slave-laws into one act, comprising the substance of the order in council, and repealing such statutes as were at variance with its spirit. The House of Assembly refused, and expressly declined, to contribute any pecuniary aid towards the instruction of the slaves. In Jamaica the temper of the planters had been ruffled by a partial insurrection of the slaves; which, however, had been suppressed without loss either of lives or property. A fresh alarm was given during the month of June. On both occasions a number of negroes were executed. The revolt was supposed to have originated in some vague expectations on the part of the slaves of aid from England. The House of Assembly, which met in November, was informed that the general government had appointed a bishop for the island, and appropriated a fund for the support of the Episcopal clergy. One important office confided to the bishop was the superintendence of the religious instruction of the slaves; and the return required for this benefit was the adoption of the order in council. The angry planters, instead of complying, appointed a committee to

inquire into the loss occasioned by the late revolt, and to report on the best mode of obtaining compensation from England. An attempt was likewise made to repeal the registry act, and much violent and foolish language was uttered. All the other colonies were tranquil, except Lower Canada and the Cape of Good Hope. In the former province, constitutional questions of an essential and grave nature were urged. The House of Assembly on the one hand, and the governor, supported by the legislative council, on the other, were at issue on the claim of the former to the unlimited right of disposing of the whole revenue. The governor and council would not admit the claim to its full extent; the Assembly refused the supplies; a dissolution ensued, and the different branches of the legislative body parted in very bad humour with each other. The disquiets of the Cape were caused by the petty tyranny of the governor Lord Charles Somerset. Sixty of the most respectable individuals of Cape Town were desirous of establishing a literary society, a museum, and a library. A fundamental article of the constitution of this body, was the exclusion from their discussions of controversial theology, the question of slavery, and all purely professional subjects; but the governor condemned the scheme as illegal, and induced the chief justice and some other members to withdraw their names. The reasons which he assigned for calling the society illegal were, first, because they had presumed to form themselves into a society "without any previous reference to his excellency," which he designated as a "wilful" disregard of the existing authorities at the Cape; secondly, because it was improper to permit the establishment of an association which might have a tendency to produce "political discussion." Another instance of the governor's oppression was his conduct towards Mr Greig, the editor of a newspaper, who published an article which Lord Charles conceived to be disrespectful to his administration. The offender was ordered to quit the colony within a month. He abandoned his employment, and advertised his effects for sale; but by this time a new whim had seized the governor, and Mr Greig received intimation that he was at liberty to remain in the colony.

England was this year involved in two wars by her foreign possessions. The Burmese war will fall to be noticed when we come to narrate the events of 1826, when it was terminated. The petty skirmishes with the barbarians of Ashantee were the cause of much private grief, and materially enhanced the expenses attendant upon the maintenance of an unhealthy and useless establishment; but were too trifling to affect the majestic interests of Britain. The shock which had been communicated both to the agricultural and manufacturing interests, by the transition from a state of commerce in which, although exposed to hostile depredation, they were encountered by no competition, to the rivalry of every nation, and increased in vehemence by the measures taken to restore the currency to a sound state, had begun to pass away. The prospect of a government acting upon a rational system cheered men's spirits; and under such auspices national industry, although still trammelled and burdened by an unnecessarily complicated, wasteful, and extravagant executive system, was beginning to regain a healthy tone. There was a regular demand for labour, and wages were rising. Manufactures of every kind were prospering. The abundance of capital led to many new devices for its employment. The lately opened trade to South America was prosecuted, with all the sanguine hope of ignorance, to an absurd extent. Joint-stock companies were formed for working the mines and conducting its pearl fisheries. The rage for such associations spread through every department of domestic industry. The wildest anticipations

of profit were indulged. The nation, drunken with the sudden increase of its mercantile transactions, was preparing for itself a sudden and tremendous reflux of its spring-tide of prosperity.

Parliament met in 1825 on the 3d of February. The question most urgently pressed upon its consideration was the necessity of suppressing the Catholic Association. The coldness of lukewarm friends, and the open enmity of avowed enemies, had rallied the whole of the Catholics and a great number of the Protestants of Ireland around this body. A contempt for the rights of citizens had called it into existence and invested it with power; and now the oppressors were the first to discover the might with which they had invested it, but without feeling inclined to betake themselves to the only effectual method of destroying it, namely, removing the grievances which gave it birth.

The expressions in the king's speech applicable to the Catholic Association were these:—"It is to be regretted that associations should exist in Ireland, which have adopted proceedings irreconcilable with the spirit of the constitution, and calculated, by exciting alarm, and by exasperating animosities, to endanger the peace of society, and retard the course of national improvement. His majesty relies upon your wisdom to consider without delay the means of applying a remedy to this evil." The address in answer to the speech from the throne was agreed to without a division. Several of the opposition members, however, protested against the line of policy indicated in the passage which we have quoted. In the Lords, the Marquis of Lansdown cautioned ministers not to be hasty in repressing open complaint, and not to beguile themselves with the idea of curing a malady merely by removing a few of the outward symptoms. Mr Brougham, in the Commons, maintained that the delay of redress had driven the Irish to seek it at their own hands. He exposed the insincerity that lurked under the plural "associations." It was a juggling attempt to assume the appearance of dealing equal justice to the Orangemen and the members of the Association.

Ministers were not slack in following up their denunciation. On the second day of the session Mr Goulburn gave notice that he would, on the 10th of February, move for leave to bring in a bill to amend certain acts relating to unlawful societies in Ireland. The acts referred to were two in number. The oldest, enacted by the Irish parliament in 1793, prohibited all assemblies for the appointment of deputies, or which assumed in any manner the right of representing the people of that country. The other, passed in 1823, with the view of conciliating party feuds, was directed against Orange societies and Orange processions. Neither touched the Catholic Association. Mr Goulburn, when propounding his measure, dwelt at great length on the members of the Association. According to him, it was composed mainly of priests, men of disappointed ambition, and the familiar friends of Tone and Emmett. The Roman Catholic gentry who belonged to it were acting, he averred, under intimidation. The objects of the institution he described as being the levying of an unauthorized tax by the agency of the priests; instituting prosecutions against individuals accused of perpetrating outrages, or acting as incendiaries; and assuming the right to call upon the illegal societies to disband. With regard to the last charge, Mr Goulburn expatiated at considerable length on one part in the Association's "Address to the People of Ireland," in which they adjured them to refrain from secret and illegal societies, "by the hate you bear the Orangemen, who are your natural enemies." The members who, in the course of the debate, supported Mr Goulburn's motion, adhered most pertinaciously to his line of argument.

Mr Canning alone attempted to awe the house by insinuating that its vote against the motion would be tantamount to a declaration that it had satisfied itself "that his majesty had been deceived by false information; and that the description applied in his majesty's speech to the associations in Ireland was altogether incorrect." On the part of the opposition, Sir Henry Parnell showed that Mr Goulburn had misrepresented the mode of collecting the Catholic rent, and the share taken by the priests in the operation; and Mr Tierney affirmed that he had exaggerated its amount. Mr Denman contended that the analogy which had been attempted to be established between the case of the constitutional association and that before the house, did not hold. The former sullied the fountain of justice, because men who accused a man because he entertained certain opinions, might sit upon his trial as jurors. The latter was at the most but on a footing with associations for the prosecution of thieves and swindlers. The members only bound themselves to contribute to the prosecution of men guilty of offences which were allowed by the whole world to be such. Each might bring to the consideration of the individual case a mind free from prejudice. Mr Plunkett, although in favour of the motion, admitted that it was quite legal to associate for the purposes professed by the Association. Mr Goulburn's motion was, however, agreed to, after a debate which lasted four nights. The Catholic Association made application to be heard at the bar of the Commons; and being denied that privilege, they repeated the request to the Lords with the same want of success. The bill passed both houses, and received the royal assent on the 9th of March. But the Association, strong in the national affection, was not so easily discomfited. It submitted without a struggle; but no sooner was the session closed than an aggregate meeting of the Catholics re-established it with a constitution which did not come under the law. Like Milton's spirits, it re-united, seemingly incapable of "mortal wound" in its "liquid texture."

The friends of the Catholics laid hold of the occasion, when the pretended advocates of emancipation were protesting the more violently their continued attachment to the cause that they were busy binding those who petitioned for it, and when some of its opponents were shaken in their firmness by the determination of the people, to renew the question. Sir Francis Burdett, after some preliminary discussion in committee, introduced a bill for the relief of the Catholics on the 23d of March. Two subordinate bills were introduced at the same time for the purpose of conciliating the most determined enemies of concession. By the one the qualification of a voter was raised to a freehold of L.10 per annum, while the object of the other was to make a provision for the Catholic clergy. The friends of the principal measure were by no means agreed as to the auxiliaries; but their variance was rendered of less consequence by the fate of the bill. While it was yet before the committee of the House of Commons, the Duke of York rose in his place in the Upper House, and in a long and confused speech declared his resolution to oppose every concession "up to the latest moment of his existence, whatever might be his situation in life, so help him God." This uncalled for and illiberal declaration of the heir-apparent exasperated the Catholics and grieved their friends. The bill passed the Commons notwithstanding; but was, as every one anticipated, thrown out in the Lords.

While parliament was thus refusing their just rights to the Catholics in one breath, and in the next forbidding, under heavy penalties, every attempt to vindicate them, the committee appointed by the Lords during the previous session to collect information respecting the state

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of Ireland, were proceeding with the investigation. The evidence led established the existence of the most extensive and pervading misery. The peasantry were described as being constantly on the verge of starvation, the victims of disease produced by the state of their squalid habitations. They were servilely dependent on their landlords, and harassed incessantly by the unprincipled extortions of the tithe-agents. The law which was devised to protect them had been perverted into an engine of oppression. The report of the committee was presented at too late a period of the session to admit of its being made the basis of any enactment. Various attempts were, however, made in the House of Commons to procure redress of specific grievances. Sir John Newport, founding upon the report of the commissioners on education, moved an address to the king, praying his majesty to give orders for instituting prosecutions against different individuals connected with the charter-schools of Ireland, who had been accused of gross acts of cruelty; which was agreed to unanimously. Mr Hume renewed his attack upon the established church in Ireland, but with a diminished number of supporters. And after wasting the best part of five months in violent declamation, and passing some nugatory and some oppressive laws, parliament abandoned Ireland to the rage of party spirit, with scarcely any thing to preserve the country from anarchy but the vigilance of a maligned and persecuted body, the Catholic Association.

Meanwhile discussions leading to a more satisfactory result had been agitated in parliament. On the 29th of March Mr Huskisson called the attention of the House of Commons to the effects of Mr Hume's bill of the previous session, repealing both the common and statute law against combinations among workmen. It was to be expected that men new to liberty should in some measure abuse it. Every unaccustomed pleasure is apt to be indulged in to excess. Accordingly it was found, that in several parts of the country, and more particularly in the west of Scotland and the sea-ports, the operatives had immediately availed themselves of the privilege of combination to an extent that endangered the just rights of their employers, and threatened to place themselves at the mercy of the more artful and unprincipled of their own body. The treasurer of the navy concluded his exposition of the state of combinations by moving for a committee to report their opinion how far it might be necessary to repeal or amend the act 5th George IV. cap. 95. The motion was agreed to; and in consequence of the report of the committee, a bill was introduced having for its object to afford protection to masters, and to such workmen as declined entering into associations. A summary jurisdiction was established, with power to convict for offences against the act on the oath of one credible witness, and to inflict an arbitrary punishment to the extent of six months imprisonment with hard labour. Some protection to the capitalist was undoubtedly necessary; but it must at the same time be admitted, that the vague manner in which the act was worded left open a wide field for oppression; and that the removal of the constitutional protection of a jury was an infringement upon the rights of the subject. The other measures introduced by Mr Huskisson were less exceptionable. The first was an important modification of the colonial system. The commerce of the colonies was thrown open to a certain extent to all friendly powers. They were entitled to trade thither with goods of their own produce in their own ships. The bonding system was likewise introduced into the colonies, and five warehousing ports appointed; Kingstown

in Jamaica, Bridgetown in Barbadoes, St John's in New Brunswick; Halifax, and Quebec. The large fees levied in the colonial ports were abolished. Two further alterations of a local nature were contemplated. The sugar of the Mauritius was admitted at the same rate as that of the West Indies; and the corn of Canada was admitted into Great Britain on payment of a moderate duty. This last provision, however, was limited in its operation to the space of two years. This measure was accompanied by a second, which had for its object the promotion of commerce by the diminution of duties imposed for protection, and not for revenue. A third was added, tending to relieve the navigation of the country. Quarantine duties were abolished. All fees on commerce with the colonies were done away. The duty imposed upon the transfer of ships was removed. And, lastly, the system of consular establishments was reformed by the substitution of fixed salaries, payable out of the public purse, for the burdensome and unequal fees which had previously been levied. These measures, although viewed with apprehension by some members of the legislature, were approved of without a dissenting voice. The surrender of its charter by the Levant Company at the same time conferred an additional benefit on the mercantile interest. The repeal of the usury laws was again attempted, but without success. A further reduction of taxation was effected by the chancellor of the exchequer, but not to any great extent.

The excessive speculation occasioned by the increasing commercial prosperity of the country led, in the autumn of 1825, to such a reverse as might have been anticipated. Lord Liverpool and Mr Huskisson had raised their warning voices against the excess of speculation. Mr Tooke and Mr McCulloch distinctly foretold the convulsion which was about to happen. The process of the change was this:—"The depressed state of trade in 1821 and 1822 had led to a diminished production and importation of goods, and to an advance of prices in 1823; and the very high prices of 1824 and 1825 were the result, first, of this diminished production and importation; secondly, of an improvement in the state of agricultural produce; thirdly, of the acknowledgment of the independence of the South American republics, which opened new markets to British commerce; and, lastly, of the loans which were raised for these republics, and transmitted in manufactured goods."¹ The consequences of a want of due foresight under these circumstances were, production on the part of the manufacturer beyond what could find vent, and importation on the part of the merchant beyond what could find a market. The delusion was kept up longer than it otherwise would have been, through the facilities afforded by large issues of paper. The first symptom of something being wrong was the turning of the exchange against England. The bank immediately, in conformity with its established policy, diminished its issues and discounts. Merchants were now pressed for funds to supply the place of those which had been vested in a mode unavailable for immediate demand. The bankers, induced by the low rate of interest, had discounted bills at unusually long dates, and laid out their funds upon securities which could not be quickly realized. Several important commercial failures took place, and the country became alarmed. A run upon the banks ensued, and several of them gave way. On the 12th of December it was announced that a London house, upon which no less than forty-seven country banks drew, had stopped payment. Next day the stoppage of another equally important house was announced. Mr

¹ On Paper-Money, Banking, and Over-Trading, by Sir Henry Parnell.

of Baring thus described the scene which ensued:—"A panic seized the public. Men would not part with their money on any terms, nor for any security, and the consequence was general distress. Persons of undoubted wealth and real capital were seen walking about the streets of London, not knowing whether they should be able to meet their engagements for next day." On the Wednesday the bank began to increase its discounts; it purchased exchequer bills, and discounted on stock. Before the end of the week it had issued in gold and notes not less than eight millions. In the mean time meetings were held in London, and in most of the trading towns, in which resolutions were adopted for the support of commercial credit. The public mind gradually became re-assured, but in the interval banks had broken down in every district of England. Between October 1825 and February 1826 fifty-nine commissions of bankruptcy were issued against English country banks; and at such a time the number of private compositions are estimated to be to the number of commissions in the proportion of four to one. In a mercantile nation such a suspension of the circulation paralyses every effort. The ship-owners suffered from their inability to procure freights; while the artisans were thrown out of employment, and exposed to famine. In Scotland the momentary distress was equally great, but the more solid system of banking materially alleviated the after-pressure. Mistrust and apprehension darkened the close of 1825, and threw their shade over the prospects of the opening year.

Parliament was opened on the 2d of February 1826 by commission. Almost the only topic touched upon in the speech was the distress which pervaded the nation. "The embarrassment," it said, "did not arise from any political events either at home or abroad. It was not produced by any unexpected demand upon the public resources, nor by the apprehension of any interruption to the general tranquillity. Some of the causes to which this evil must be attributed lie without the direct reach of parliamentary interposition, nor can security against the recurrence of them be found, unless in the experience of the sufferings which they have occasioned. But to a certain portion of this evil, correctives, at least, if not effectual remedies, may be applied, and his majesty relies upon your wisdom to devise such measures as may tend to protect both private and public interests against the like sudden and violent fluctuations, by placing on a more firm foundation the currency and circulating credit of the country."

The answer proposed by the ministerial party to be returned to this recommendation was agreed to in both houses without opposition; but many members embraced the opportunity of stating their opinions of the state of the country, and the measures that ought to be adopted. Lord King attacked the corn laws, and proposed that the Lords should pledge themselves to their revisal during the session. Mr Brougham thought the causes of the distress more complicated than those adverted to in the speech, and dwelt upon its universality as a sufficient proof that its origin was not to be sought in the adoption of more liberal commercial principles. Mr Hume maintained that the true cause of the distress was the heavy pressure of taxation, and the wasteful expenditure of government. The members connected with the country bankers defended the characters of these gentlemen; and Mr Baring and others eulogised the conduct of the Bank of England. Ministers announced that the palliatives they meant to apply were, first, to prohibit the circulation, after a certain period, of notes under two pounds, whether issued by the Bank of England or any private banker; secondly, to increase the stability of private banks, by enabling them to augment their capital, and with that view to repeal

the clause in the charter of the Bank of England which made it unlawful for any private banking establishment to consist of more than six partners.

The first of these projects carried into execution was that which contemplated the destruction of the small notes. Government entertained apprehensions that during the interval which must necessarily elapse between the announcement of their plan and its receiving the sanction of law, an infinite number of small notes might be stamped, and immediately gave orders to put an end to the stamping of such notes. The step was animadverted on in both houses as a most dangerous assumption of power, but defended as necessary to insure the success of the measures in contemplation. On the 10th of February the chancellor of the exchequer, in a committee of the whole house, fully developed that part of the plan which related to the small-note circulation. He proposed that no new notes under the value of five pounds should be stamped; and that all promissory notes payable to the bearer on demand, issued by license, and under the value of five pounds, and stamped previous to the 5th of February 1826, should be allowed to circulate until the 5th of February 1829, and no longer. Ministers at a later period consented to allow the Bank of England the power to issue one and two pound notes, stamped at any time prior to the 10th of October, but not to continue them in circulation after the lapse of three years, the limited date of the existence of such a circulation. This measure met with vehement opposition in the Commons, but from a very small minority. In the Lords it was less pertinaciously opposed. Ministers had from the beginning limited the immediate operation of their bill to England, but declared that they could not see on what principle different systems of currency should prevail on the opposite sides of the Tweed. Scotland took the alarm; a small-note currency was there identified with every step in the march of national improvement. The tables of both houses of parliament were instantly loaded with petitions from that country against any restrictions on its paper currency. It was necessary to pay attention to representations in which men of all political parties and every rank in life concurred. Select committees were appointed to investigate the matter; and the result of their inquiries was, that the small-note currency of Scotland remained untouched. Ireland was also left in possession of her small notes.

In order to give effect to the other measure contemplated by ministers, it was necessary to interfere to a certain extent with the chartered privileges of the Bank of England, and the consent of that body was therefore requisite even to its introduction. A communication was accordingly made by the first lord of the treasury and the chancellor of the exchequer, to the governor of the bank, on the 13th of January, containing a detailed and luminous exposition of the views of ministry, and expressing their hopes "that the bank will make no difficulty in giving up their exclusive privileges, in respect to the number of partners engaged in banking, as to any district fifty miles from the metropolis." The directors, in their answer of the 20th, declined the task of recommending to the proprietors the abandonment of their exclusive privileges. Several papers were interchanged, and finally, a general court, held on the 3d of February, consented to waive their privilege, except within a district of fifty miles round the city of London. In the course of this correspondence the propriety of the bank establishing branches was suggested by government. The measure founded upon this arrangement was first introduced into the House of Lords; but no discussion took place upon it, until on the 17th of March Lord Liverpool moved the second reading. The debate even then wan-

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dered entirely from the subject, and lost itself in vague disquisitions on the history and fluctuations of the currency. In the committee Lord Liverpool moved the addition of a clause authorizing the Bank of England to establish branch banks throughout the country. The adoption of this clause rendered another proviso necessary, declaring the notes issued by the branch banks payable at the place where they were issued. The bill experienced a warmer opposition in the House of Commons, but was ultimately, with some slight alterations, agreed to.

Public confidence was not however yet quite restored, and ministers were pressed to take some step for the alleviation of the immediate pressure. After some hesitation, an arrangement was made with the bank, in virtue of which it agreed to make advances to private individuals upon the deposit of goods, merchandise, and other securities. The whole sum advanced was not to exceed three millions. The adoption of this measure rendered it necessary, for the security of the bank, to introduce a new bill regarding the law of principal and agent. This act enabled all persons in the possession of goods, possessed likewise of documents conferring the property of them, although such persons should be merely factors or agents, to pledge with the bank as effectually as if they had been the actual owners. Its operation was confined to deposits made with the bank. Commissioners were immediately appointed by the bank in the principal provincial towns. They were almost uniformly merchants resident in the district. The applications for advances were much fewer than had been anticipated: either men were unwilling to disclose their necessities to local competitors, or the knowledge that a fund was provided restored confidence.

During these transactions the cause of the late panic continued to be keenly canvassed both in parliament and beyond its walls. Emigration was suggested as a source of relief for the labouring classes, and a committee appointed to collect information on the subject. The corn laws were most vehemently exclaimed against, and even forced upon the notice of parliament. Ministers acknowledged the necessity that existed for thoroughly revising them, but deprecated the introduction of so extensive a topic during a session which, as the last of that parliament, must necessarily prove a brief one. The general question was evaded; yet before the end of the session, it was found necessary to introduce two bills to modify the strict operation of these laws. The first allowed wheat in bond to come into the market on payment of a duty of ten shillings per quarter, and other kinds of grain at inferior rates. The second gave ministers a discretionary power of admitting foreign grain during the recess to the limited quantity of five hundred thousand quarters. These slender concessions to justice and common sense were wrung with the utmost difficulty from the reluctant landed interest. On the other hand, a portion of the manufacturing and mercantile interest showed themselves equally unreasonable. The silk trade, a hot-house plant, which has not been long enough exposed to our bracing atmosphere out of doors to become sufficiently acclimatized, was as usual the first to complain. Petitions flowed in upon parliament from every district where this employment had struck root. An attempt was made to have them referred to a select committee, as a first step towards checking the advance made by government in liberal commercial policy; but without success. The ship owners, next to the landholders the most hardened and remorseless monopolists in the nation, were the next to make their voice heard. Mr Huskisson met their allegations by a prompt appeal to facts, moving for "returns of ships built in the British dominions between 1814 and 1825 both inclusive, distinguishing the number in each year, and the amount of their tonnage."

The advantages likely to result from the gradual emancipation of the country from ill-judged trammels upon its industry were too apparent to allow, in any enlightened mind, of the thought of a retrograde movement.

In the discussions of this session to which we have hitherto alluded, the ministers had found themselves uniformly in triumphant majorities, swelled indeed more frequently by their habitual opponents than by some of their avowed supporters. The restriction of the small-note currency was a step of questionable expediency, but was susceptible of a plausible defence. The curtailment of the bank privileges could only be disapproved of by a member of that powerful incorporation. The relaxation of the corn laws, and the removal of commercial restrictions, were measures based alike upon justice and expediency. Every honest and enlightened man lent a willing support to the projectors of such a system of policy. But finance was their weak side. Robinson and Huskisson entertained clear business notions, and were willing to have adopted an honest system. Canning saw that their views were popular, and coveted the glory of enforcing them. But they and their friends knew right well that their places in the cabinet were held but by sufferance of the faction which, in virtue of its hold upon the House of Commons, domineered over England. They were kept in office to transact business, while the real holders of power reaped the profits. They might make what parade of liberal sentiments they pleased in order to conciliate the nation, so long as they did not trench upon the emoluments of their patrons. The conglomeration of offices ostensibly provided for discharging the executive functions of government, was frail, cumbrous, and ineffective, but it afforded "butress and coigne of vantage" for scions of nobility to build "their pendant beds and procreant cradles," and its structure was in no event to be interfered with. They were bound to defend what in their souls they believed to be indefensible; and the event gives it proof.

The chancellor of the exchequer, on opening the budget on the 13th of March, took a large review of the whole financial system of the country from the conclusion of peace. It will be sufficient if we confine ourselves at present to what related more immediately to the period during which he himself had held office. Considerable retrenchment had been effected between 1815 and 1819. During the last-mentioned year an increase of taxation had been made to the amount of three millions. In 1820 there had been no change, and little in 1821. In 1822 Mr Vansittart was reluctantly forced to remit rather more than three millions of taxes. Matters were thus placed upon the same footing as in 1819. Mr Robinson claimed to have remitted during his administration L.8,073,000. The annual charge on the whole debt on the 5th of January 1823 he stated at L.29,286,000; and on the 5th of January 1826 at L.27,946,000; being a reduction of L.1,339,000 in three years. But he omitted to remind the house that during each of these three years he had been professedly setting apart an annual sum of five millions as a sinking fund. In his estimate of the amount of the debt he omitted the bargain commenced by Mr Vansittart, and completed by himself, for the payment of military and naval pensions,—an annuity of L.2,800,000, which had forty-one and a half years to run, paid by government to trustees who had undertaken to discharge that burden. Mr Robinson was likewise reminded by Mr Hume that the decrease on taxation was more apparent than real. The taxes in 1818 had produced a sum of L.52,000,000; and in 1825 their amount was L.52,540,000. In 1818 the taxes were payable in paper not convertible into gold, on an average of three years, at a lower rate than L.5 per ounce. In 1825 they were payable in gold, or in paper money convertible into gold,

at the rate of seventy-seven shillings and tenpence half-penny per ounce. In reality there had been an increase of taxation instead of a reduction. The chancellor of the exchequer evaded Mr Hume's statements and arguments, under the pretext that they were too complicated to be discussed at once. There was nothing in the argument he advanced, that the amount of revenue being derived chiefly from the excise and customs, indicated increased consumption. If the officials of government were adequately remunerated in the depreciated currency, they were extravagantly paid after its value had been raised. Undue burdens were imposed upon the country; but these were never adverted to. The majorities were the only answer relied upon by ministers; and they were applied with great success to meet motions for reduction of the naval, military, and diplomatic expenditure.

The discussions which arose during this session on the state of Ireland were as vain and fruitless as might be expected from a legislature indifferent to or ignorant of the merits of either question.

In the speech by which the session was prorogued, allusion was made to the termination of hostilities with the Burmese empire. The origin, progress, and termination of this war were briefly these:—For many years the Burmese officers had been in the practice of committing acts of encroachment and aggression on the East India Company's territories. Towards the close of the year 1823 they had crossed the frontiers, and entrenched themselves within the limits belonging to the British. During January and February 1824 they were driven from several of their stockades; but on the 21st of February they succeeded in repulsing a British force, which inspired them with fresh audacity. The governor-general, by the advice of his council, issued a declaration of war on the 5th of March. A considerable naval and military armament, drawn partly from Madras and partly from Calcutta, was assembled at Port Cornwallis in the beginning of May, under the command of Sir Archibald Campbell and Commodore Grant. It attacked Rangoon, the principal sea-port of Ava, on the 10th of May, and took it after a feeble resistance, without the loss of a single man, capturing on the occasion a considerable quantity of artillery and ammunition. A detachment sent against the island of Cheduba, on the Arracan coast, and another against Negrais Isle, at the mouth of the Nerbudda, were equally successful. On the 10th of June General Campbell moved upon the enemy's camp at Kemmendine, which he attacked in concert with the flotilla. The position was evacuated by the Burmese troops, after sustaining a cannonade of a few hours. The British maintained their advantage in several engagements, and the enemy withdrew to a greater distance; but the inundations, and the necessity of collecting a large supply of provisions, induced General Campbell to continue his head-quarters at Rangoon up to the end of the year. Expeditions were, however, detached against the most important maritime stations; and by the end of October the whole of the Burmese coast from Rangoon to the eastward was subjected to the British arms. On the 1st of December Maha Bundoolah, who had been lately appointed to the command of the Burmese army, appeared in front of General Campbell's position with from fifty to sixty thousand men. He was allowed to extend his line round the British flanks, and to the rear, and even to entrench himself in that position. On the 5th General Campbell attacked and entirely routed his left wing. Bundoolah reinforced his centre and right with the scattered remnant during the night, and presented himself next day in front, having pushed his entrenchments close up to the British lines. General Campbell attacked them at noon, and drove them from all their entrenchments.

Bundoolah having received some reinforcements, took up a strong position with twenty-five thousand men, "with a judgment," says Sir Archibald Campbell, "which would do credit to the best instructed engineers of the most civilized and warlike nations." On the 15th a body of thirteen hundred of General Campbell's infantry stormed the works, and the enemy fled, leaving their camp standing, with all their baggage and a large proportion of their arms and ammunition. Whilst these operations were carrying on, demonstrations had been made by the Burmese on the Chittagong frontier. Their arms were at first attended by success, and they continued to hover around Ramao till the end of July. Colonel Innes having taken the command of the Sylhet frontier, they gradually fell back; and the end of October saw Cachar completely evacuated, and the enemy in full retreat for Munnipoor. About the middle of February 1825 Sir Archibald Campbell moved from Rangoon upon Prome. The inhabitants of the country through which he passed saw with pleasure the expulsion of the Burmese. Having reached Sorrawah, fifty miles in advance of Rangoon, the commander-in-chief halted in the hope of hearing of the fall of Donabew, which was to be attacked by the column advancing under General Cotton by the Irawaddy. But the attack was foiled. On the 11th of March General Campbell commenced a retrograde movement on Donabew, before which he arrived on the 25th, and established a communication with the water column on the 27th. The batteries were opened on the 1st of April; and Maha Bundoolah having been accidentally killed, the Burmese garrison abandoned the fort. Sir Archibald immediately resumed his march upon Prome, which he entered on the 25th of April without firing a shot. By the 1st of February the Burmese were expelled from Assam. A series of brilliant operations on the 26th, 27th, 28th, and 29th of March gave General Morrison possession of Arracan. In Cachar General Shuldham was advancing upon Munnipoor, which lies two hundred miles north-west of Ammerapoor, the capital of the Burmese empire. The main body of the army was arrested at Prome by the rainy season, and felt somewhat straitened for provisions, the country through which their route lay having been entirely depopulated. The mortality among the troops was also considerable. The Burmese had twenty thousand men at Mecadore, fifty miles from Prome, and the same number at Patana-go. An equally numerous body was interposed between the British force in Arracan and the troops under the commander-in-chief. In September negotiations for the restoration of peace were set on foot. A cessation of hostilities was agreed to on the 17th, to continue till the 17th of October. Commissioners from the king of Ava met the British general at Neounben-ziek on the 2d of October. They endeavoured to elude his demands for territorial cessions and indemnification; but finding him immovable, requested a prolongation of the armistice, that they might consult their court. It was accordingly extended till the 2d of November. Preparations were in the meanwhile made to prosecute the war with activity in case the armistice did not lead to a definite treaty. On receiving the proposed terms of peace, his majesty of the golden foot burst into a violent passion, and gave orders to renew offensive operations. Before the termination of the armistice it was haughtily announced to the British leader—"If you wish for peace you may go away; but if you wish either money or territory, no friendship can exist between us. This is Burman custom." The whole army of Ava, nearly sixty thousand strong, advanced against Prome, occupied by six thousand British and native troops. The left division of fifteen thousand, commanded by Maha Nemiow, approached close to Prome, keeping the east-

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ern bank of the river. By the end of November the centre, between twenty-five and thirty thousand strong, under the Kee Wonghee, showed itself on the heights of Napadee, on the same side of the river, five miles above Prome. The right, consisting of fifteen thousand men under Sudda Woon, were posted on the opposite side of the river. All these bodies were, according to the military system of the Burmese, strongly entrenched. Sir Archibald Campbell, after expecting an attack for some days in vain, marched on the 1st of December to dislodge the corps of Maha Ncmiow; and in this he succeeded after a desperate resistance. The leader fell, and the dispersion of his followers was so complete that they did not even attempt to form a junction with their centre. Sir Archibald, after allowing his troops only two hours repose, returned to Zeouke, having marched twenty-nine miles and fought a battle in the course of a day. Next day the British stormed the heights of Napadee under a heavy cannonade, entirely dispersed the centre, and captured the whole of its artillery, ammunition, and military stores. The position of the right wing was attacked on the 5th; the Burmese were driven from their defences, which were set on fire; and a considerable amount of military stores was captured. The road to the capital was now open, and Sir Archibald, after allowing his men one day's repose, advanced upon it in two columns. The Burmese once more indicated a desire to make peace; but as their shuffling and equivocation rendered it impossible to repose confidence in their professions, the commander-in-chief continued to advance; nor was it till the army had arrived within four days' march of the capital that the king agreed to accept of the terms which were offered to him. He renounced all claims to Assam, Cachar, and Jyntia, and recognised Gumbheer Singh as rajah of Munnipoor. He ceded to the Company the four great divisions of Arracan, and the provinces Yeh, Tavoy, Mergui, and Tenasserim. And to indemnify the British government he agreed to pay the sum of one crore of rupees. Twenty-five lacs of rupees were to be paid before the British retired upon Rangoon; the same sum before they evacuated the king's dominions; and the remaining half by equal annual instalments within two years from the date of the treaty. The handful of troops which had achieved this triumph commenced its return on the 5th of March. The India Company obtained by this conquest the removal of a troublesome neighbour, an increase of territory, and a consequent increased perplexity in its affairs. Britain gained nothing but an augmentation of its military and naval establishments.

Parliament was prorogued on the 31st of May 1826, and dissolved on the 2d of June; and writs were ordered to be issued for a new election, returnable on the 25th of July. The elections afforded a test of the success which had attended the new system of ministers. They showed how far the confidence of the people had been won by the concessions made to the spirit of the age and the popular eloquence of Mr Canning. In Scotland, as was to be expected from its miserable system of mock representation, there was a dull silent adherence to the old routine, from which nothing could be gathered. In Ireland the Catholic Association prosecuted with success its sacred task of forcing from an unwilling government the nation's rights. The bond of union, in defiance of the law, was kept up among its members; "the rent" continued to be levied; and the priests had been won to lend it their confidence. In every district of Ireland the new allies struggled with unwearied assiduity to turn the angry energies of the peasantry into a legal channel, and to teach them to direct their efforts to the attainment of some real good. The elections offered them an opportunity of strengthening the phalanx of their friends in parliament, and of testifying the national senti-

ment. The forty-shilling freeholders, a body of men who had been encouraged by unprincipled political gamblers to increase and multiply beyond what the land seemed able to support, and more neglected by their suzerains than the beasts of the field, except when the time arrived that they were to be driven to the poll, were converted into an engine to overthrow the power of their creators. The tenantry were besieged by the exhortations of clerical and lay emancipators to remember that they had rights as well as their landlords, and that they owed duties to themselves as well as to others. The great landholders now found the automata upon whom they had hitherto relied asserting wills of their own. The most splendid victory of the Catholics was gained in Waterford, where a member of the Beresford family was compelled to withdraw from the contest. The Catholic Association might point with pride to the change it had worked in the character of the Irish peasant; for, amidst all the heat of contested elections, bloodshed and lawless violence were on the decline, even while the hungry artisans of England were driven by want to violate the law. In England the ministers were almost everywhere triumphant. Mr Brougham experienced a more marked defeat in Westmoreland than on any former occasion. Lord Howick and Mr Beaumont, the Whig candidates for Northumberland, both failed. Mr Huskisson was again returned for Liverpool. The metropolis alone adhered to its old principles. The usual topics were advanced by the candidates for popular favour. Only one is worthy of being recorded. In proportion as the Catholic cause advanced in Ireland it seemed to grow weaker in England. The same ignorance, prejudice, and sectarian spirit of which the Catholics stood accused was appealed to by their adversaries, and the almost absolute watchword "no popery" was revived.

The bustle of the elections was succeeded by grave apprehensions of famine. Wheat had proved an average crop through England; but a long drought threatened a dearth in every other sort of grain. Barley was deficient; there was every appearance of a scarcity of pulse; oats, in many districts the most important article of food to the lower classes, and the potato crop, the sole stay of Ireland, threatened to fail altogether. The farmers, too, were suffering; for the violent and continued heats had dried up the richest meadow-land in England, till it became necessary to feed cattle with dry fodder, as if it were the depth of winter. A seasonable change of weather averted a great portion of the impending calamity; but in the month of September prospects were most alarming, and the rise in the price of grain pressed with unwonted severity upon the working classes, who were still suffering from the effects of the late panic. The price of oats in reality exceeded the importation price; but the crafty devices of the landlords' committee respecting the taking of averages precluded the opening of the ports before the 15th of November, although in the interim a famine might have depopulated the country. Ministers generously resolved to risk a violation of the law rather than incur the deeper moral responsibility of allowing the people to perish by famine. On the first of September they issued an order in council, authorizing the immediate importation of oats, oatmeal, &c. upon the persons importing becoming bound to pay a conditional duty. The necessity of obtaining an act of indemnity for this step occasioned the assembling of parliament at an earlier season than usual.

The first session of the eighth parliament of the united kingdom of Great Britain and Ireland commenced on the 14th of November 1826, and terminated on the 2d of July 1827. It adjourned twice; from the 13th of December to the 8th of February, and from the 12th of April to the 1st of May. It will be necessary, in order to pre-

of serve the current of our narrative free from perplexity, to detail briefly the changes in administration, and the intrigues by which they were effected, before narrating the legislative proceedings of this session.

Lord Liverpool was struck with apoplexy on the morning of the 17th of February 1826. As it was possible that he might recover sufficiently to resume his share in public business, a feeling of delicacy kept both the king and ministers from taking any immediate steps to re-organize the government. The disunion between the two incompatible parties which composed the cabinet continued to increase after the removal of their connecting link; and a sense of this, aided by the urgency of opposition, forbade longer delay. The first practical discussions respecting a new arrangement took place between the king and Mr Canning, at the royal lodge, on the 28th of March. His majesty's first idea was, to retain the services of Mr Canning and his friends, and to place at the head of administration a peer holding Lord Liverpool's opinions on the Catholic question. Mr Canning explicitly stated, that if those whose sentiments were favourable to the Catholics were to be excluded, solely on account of these sentiments, from the highest offices of state, he could "not consent to be the individual in whose person such a principle should be established." He therefore felt himself bound honestly to state, that "the substantive power of first minister he must have, and, what was more, must be known to have," or he must beg leave to retire from a situation which he could "no longer fill with satisfaction to himself or with benefit to the king's service." Mr Canning felt, in short, that in any administration of which he should form a part, whoever might be the ostensible, he must be the real prime minister, and he was naturally and justly indignant at the demand that he should yield up his laurels to grace the brow of titled imbecility.

With the exception of an interview, during which nothing of moment occurred, Mr Canning had no more communication with the king till the 10th of April, when he received the royal commands to prepare, "with as little delay as possible, a plan for the reconstruction of the administration." There were, however, frequent conferences in the interim between Mr Canning, the Duke of Wellington, and Mr Peel. The last-mentioned gentleman frankly declared that he had made up his mind to resign if an individual favourable to the Catholics were placed at the head of government. The duke urged strongly the necessity of having a prime minister opposed to concession. Mr Peel's professions "of respect and regard" for Mr Canning were unbounded; so much so that Mr Canning expressed himself as feeling "it quite impossible to do sufficient justice to his frankness and straightforwardness, and to feelings for which he owed he had not before given Mr Peel credit." The subsequent conduct of that minister has proved that Mr Canning's first impressions were correct. The haughty character of the Duke of Wellington prevented him from wearing the mask to so much purpose. The language of the Duke of Newcastle, and other adherents of the Duke of Wellington, not disapproved of if not sanctioned by his Grace, had naturally irritated Mr Canning. By the intervention of mutual friends several interviews took place between the duke and Mr Canning, but without producing any effect beyond a re-establishment of the outward show of cordiality, and a conviction in the mind of Mr Canning that the duke coveted the post of prime minister for himself. The justice of this conclusion is established by the eagerness with which that eminent soldier on two subsequent occasions grasped at the office, and by Mr Peel's waiting upon Mr Canning at the king's command, on the 9th of April, to suggest the appointment of the duke as premier, an

arrangement which Mr Peel conceived likely to solve all difficulties.

Mr Canning left the king late in the afternoon of the 10th of April; and as parliament was to adjourn for the Easter recess on the 12th, there was not a moment to be lost. He found Lord Grenville, Mr Huskisson, and Mr Planta at the foreign office. Lord Grenville was requested to bear to his brother-in-law, Lord Harrowby, a verbal announcement of Mr Canning's having been ordered to construct an administration; Mr Huskisson was charged with a similar mission to Lord Melville and Mr Wynn; and Mr Planta to Mr Robinson. The same communication was made by Mr Canning in writing to the Duke of Wellington, Lord Bathurst, Lord Westmoreland, and Lord Bexley. The lord chancellor and Mr Peel were waited upon by Mr Canning in person. The projected cabinet, it was intimated, was to "adhere to the principles on which Lord Liverpool's government had so long acted. Lord Eldon "had long felt anxious to resign; but wished to procrastinate the time, not for his own sake, but on account of the business of his court. In about four months he would wind up its affairs and retire." Finding, however, his colleagues determined to secede from Mr Canning, his lordship at last vacated the woosack, "with coy, reluctant, amorous delay." The Duke of Wellington inquired who was the individual intended to be put at the head of the government. To Mr Canning's reply that the king "usually intrusted the formation of an administration to the individual whom it was his majesty's gracious intention to put at the head of it," his Grace rejoined by requesting Mr Canning to desire his majesty "to excuse him from belonging to his councils." Lord Westmoreland hesitated to pledge himself, and ultimately declined office on the ground that "the chief office was in the hands of a person of different principles from Lord Liverpool's." Mr Canning replied to this insinuation; but only received a brief and haughty note, intimating that Lord Westmoreland "declined to enter into a literary conflict upon principles." Lord Bexley first accepted office, and afterwards drew back. Lord Bathurst wished to see Mr Canning, but sent in his demission before an interview took place. The reason afterwards assigned was the resignation of so many of his colleagues. Mr Peel adhered to his first determination. Lastly, Lord Melville made up his mind to resign, because, as he expressed himself in the House of Lords, he doubted the "stability" of Mr Canning's administration.

It was impossible for Mr Canning not to see that these answers were the result of combination. The king took the same view of the transaction; and, already moved by the dictatorial tone of the Dukes of Wellington and Newcastle, was roused, by this pertinacious opposition to the minister of his choice, to long unwonted decision. He immediately confirmed Mr Canning's appointment by giving him his hand to kiss. The new premier lost not a moment in gathering the friends who had stood true to him,—Lord Harrowby, Mr Robinson, Mr Wynn, and Mr Huskisson,—and preparing to fill up vacancies. Lord Melville was the last to resign, and his office was the first filled up. Before twenty-four hours had elapsed, his royal highness the Duke of Clarence, the heir-presumptive to the throne, was placed at the head of the admiralty. Lords Anglesey and Lyndhurst accepted the offices vacated by the Duke of Wellington and Lord Eldon; the Duke of Portland, Lord Dudley, and Mr Sturges Bourne, joined the administration. A negotiation was opened with the Whigs through the medium of Lord Lansdown. Some difficulties occurred to prevent the immediate accession of the party to the number of Mr Canning's avowed supporters. In general, however, they cordially co-operated with him;

Reign of George IV. and it was settled, that at the close of the session Lords Lansdown and Carlisle, and Mr Tierney, should have seats in the cabinet.

The ministry seemed irresistible. Supported by triumphant majorities in both houses—opposed by the virulent but powerless hatred of a talentless faction of discontented place-hunters—suspected only by Lord Grey in the House of Lords, and Mr Hume and his small band of sturdy reformers in the Commons—it swayed the legislature to its will. The great body of the nation saw, in the junction of the Whigs with Mr Canning's friends, a further guarantee of administrative reform. The question of parliamentary reform had been postponed by universal consent, and the concession of it by the Whigs was less noticed than perhaps it ought to have been. Ireland, relieved from a portion of her fears by the death of the Duke of York, was waiting in breathless expectation of the change which the new arrangements were to work in her favour. The calculations of all were, however, rendered nugatory by the death of Mr Canning on the 8th of August 1827.

George Canning was more the orator, and specious organ of a party, than a statesman. He had no political principles, and it may even be doubted whether he was capable of comprehending any. In his youth he advocated despotic opinions, and the policy of restriction; towards the close of his career he patronized popular rights, and advocated a liberal commercial system; and the weapons which he used, dazzling declamation and ready wit, were alike available on either side. It would be in vain to seek in his numerous orations any clear and palpable delineation of a system, or definition of principle; they are mere showy superstructures, based on the vulgar assumptions of a party man. His favourite maxim, "to hold the balance between contending principles," is the severest satire that has been pronounced against him. It was an explicit confession that his mind was so constructed as to be incapable of apprehending truth. Even his eloquence was showy, not substantial. Its most beautiful passages are tricked out abstractions and common-places, not those burning expressions of sentiment which strike conviction, and convey new ideas to the auditor. His jokes were not always either new or select. Canning's power consisted in a generous disposition, which hankered after the love and admiration of all he came in contact with; in a physical vehemence, which compensated to a certain extent for his deficiency in reasoning and sentiment; and a feeling of rhetorical beauty, which, from its common-place character, kept him uniformly within the range of the comprehension of those he was addressing. In a popular government Canning would have sunk before men of business and fluent expression; in a despotic government his irritable temperament would have incapacitated him for competition with the cool and guarded courtier. Even in the House of Commons, his vehement disposition, alike incapable of enduring opposition or bearing triumph with moderation, if it sometimes enabled him to bear down petulance, as in the case of the celebrated "yes" with which he met some captious questions from Mr Dawson, at times prompted him to a strain of declamation revolting to every generous feeling, as in the case of his ungentlemanly joke at the expense of Lord Nugent. But on the whole, in a government such as he found England, where a despotic oligarchy sought to juggle the nation with the show of free discussion, he was an invaluable tool. He put a fair face on their worst proceedings, and he could adapt himself to every change in public opinion. Too late he awakened to a sense of his own dignity. The cold-hearted oppressors to whom he had sold his youthful vigour turned the whole energy of their concentrated malice upon him the moment he asserted his equality with them. Their

scorn and persecution preyed upon his spirits, harassed and undermined his constitution. His death was an example of retributive justice: he died the victim of the false god to whom he had sold himself.

The cabinet he had collected did not long survive him. His personality was the only cement that kept it together. Had he survived, time might have given it consistency; but both he and his immediate friends must have purchased it at the price of large concession to popular demands. He had thrown himself into the arms of the Whigs, and both parties must have thrown themselves, as the latter have since done, into the arms of the people, to enable them to make a stand against the aristocracy. His cabinet at the moment of his death consisted of three incompatible parties;—some adherents of the old *far niente* system; Mr Huskisson and others, who wished to govern in accordance with popular principles, but without conceding any direct influence to the people; and the Whigs, whose professions had ever been a desire to afford the people a more direct voice in public councils. At the head of this discordant mass was placed Lord Goderich, an intelligent and well-meaning man, but totally destitute of promptitude and decision. Mr Herries, whose personal attachments bound him to the Duke of Wellington and Mr Peel, was placed in an important office. This ill-assorted shadow of a government was huddled up after the prorogation in 1827, and did not survive to meet the session of 1828. Lord Goderich resigned on the 8th of January. Some violent recrimination ensued between the parties, worthy only of ephemeral notice. One or other, or both parties, might have behaved, in fact did behave unhandsomely; but the real cause of the dissolution of Lord Goderich's government lay deeper,—in the very nature of its constitution.

Before proceeding to the history of his successors in office, and the fortunes of the nation under their sway, it will be necessary to revert to the proceedings of the session 1826–27; a session interrupted by two long recesses, and frittered away by vehement personal disputes.

The subject of the corn laws was almost the only one that met with serious and continued attention. The king's speech was studiously silent upon the general question, but this very silence was made a pretext for introducing it. Lord King in the House of Lords moved an amendment to the address, condemning the corn laws. Mr Western in the Commons moved an amendment to the address, calling for investigation into the state of the agricultural interest, and pointing at additional restrictions in its favour. Ministers objected to the discussion, on the ground that parliament had been summoned to meet before Christmas, not for purposes of general legislation, but to pass an act of indemnity in favour of ministers, in consequence of their having opened the ports before the averages indicated that the price of grain warranted such a step. Lord Liverpool and Mr Canning assured parliament that ministers were prepared to propose a general measure regarding the corn laws, and that they would produce it immediately after the holidays. In consequence of these representations, the only step taken before the close of 1826 was the passing of the indemnity act. Mr Whitmore took occasion to remark that the measure was a new proof of the absurdity of a law which they had been obliged to break thrice in the course of three years. It was intended to introduce the subject of the proposed alterations to the notice of both houses on the same evening, namely, the 17th of February.

The illness of Lord Liverpool prevented the propositions being submitted to a committee of the upper house, and Mr Canning's indisposition caused a postponement of the committee of the lower till the 1st of March. On that day the foreign secretary proposed a series of resolutions

Reign of George IV. respecting the future regulation of the corn trade, to be adopted by the committee as the foundation of a bill. The object of the proposed measure he stated to be to afford as much protection to the land-owner as was necessary, at the expense of as little pressure upon the commercial interest as was possible. The mode in which this was to be accomplished was by imposing a scale of regulated duties upon foreign grain, rising and falling inversely with the fall and rise of prices. The medium price of wheat assumed was sixty shillings, and the corresponding duty was one pound per quarter. For every shilling wheat rose above the medium price there was to be a reduction of two shillings of duty until the price reached seventy shillings, at or above which it was liable to a duty of one shilling per quarter. For every shilling wheat fell below the medium price, there was imposed an additional two shillings of duty. The duty upon other kinds of grain was in proportion, and varied upon the same principle. A duty equal in amount to the duty payable on five bushels of wheat was imposed upon every barrel of wheat-meal and flour, being a hundred and ninety-six pounds. A duty equal in amount to the duty payable on a quarter of oats was imposed upon every quantity of two hundred and fifty-two pounds of oatmeal. The averages regulating the amount of duty were to be taken weekly. Mr Canning having submitted his measure to the house, postponed its consideration for a week, in order that every appearance of precipitation should be avoided. The debate, when resumed, turned chiefly upon the question of too much or too little. It was waged, however, with all that pertinacity and violence which characterize the disputes of men who differ little from each other in opinion. Some concessions were made by ministers, but they were all in favour of the land-owners. Mr Hume took no part in the discussion in committee, but when the report was brought up he entered his protest against the measure. He manfully argued for a free trade in corn as in every thing else. He maintained, that if there was truth in the allegation of the land-owners, that they bore a heavier burden of taxation than the rest of the community, the proper way to afford them relief was by a countervailing duty, or the repeal of taxes. The country needed foreign grain; it could not one year with another grow enough for its own support. When the ports were sometimes open and sometimes shut, no foreign nation could rationally venture on the speculation of raising grain for the English market; the demand was too uncertain. Mr Hume suggested the imposition of a duty of fifteen shillings on foreign wheat, to decrease annually one shilling until it was reduced to ten shillings, which was to remain the permanent duty. Only fifteen members voted for this amendment. The House of Commons having approved of Mr Canning's resolutions, a bill enacting them into a law was introduced, which reached its third reading on the 12th of April, was passed, and sent to the Lords.

A strong opposition to the provisions of the bill had been mustering and threatening before it made its appearance in the upper house. Various unimportant amendments were made in committee; but one brought forward by the Duke of Wellington sealed the fate of the bill. His Grace moved, that "no foreign corn in bond should be taken out of bond until the average price of corn should have reached sixty-six shillings." This amendment, which completely altered the nature of the bill, was carried by considerable majorities, both in committee and when the report was brought up. Ministry in consequence abandoned the mutilated measure. A temporary bill was introduced by Mr Canning, lest a year should be allowed to elapse without any legal provision on the subject; and this passed through both houses without any serious

opposition. The Duke of Wellington asserted that his amendment met with the concurrence of his majesty's ministers, and produced a letter from Mr Huskisson in corroboration of his assertion. One expression in the letter was certainly liable to misapprehension, and might have contained the original hint of the duke's amendment; but Mr Huskisson expressly said, even of his own suggestion, that it would hazard the safety of the measure, and therefore he could not approve of it. The duke, also, when charged with having sought to defeat a measure to which he had given his assent during Lord Liverpool's life, replied that he had only approved of the general principle of it. But his measure was subversive of the principle of the bill. No wonder then that Mr Canning saw in the duke's amendment, and the hearty support it found, a personal attack. His only mistake lay in calling him an instrument in the hands of others. His previous intriguing, and his subsequent political career, show him to have been an instrument possessed of a perfect consciousness of the purposes to which he was applied. Mr Canning was thus far in the right. He was the object of the most intense animosity to the high Tories. They hated with all a woman's hatred one of the democracy who aspired to an equality with them, who they felt surpassed them in intellectual power, and who they were conscious knew that he surpassed them.

The other questions brought before the session of parliament which witnessed the termination of Mr Canning's career, were discussed with a considerable degree of listlessness and impatience. Mr Canning's vindication of the prompt interference of Britain, when Spain threatened to disturb by violence the internal arrangements of Portugal, was splendid and convincing. The establishment of a constitutional form of government in Portugal had given rise to much faction and intrigue; and there had been numerous desertions from the army. The disaffected had been well received, and allowed to organize themselves behind the Spanish frontier, and had even dared to violate the Portuguese territory. A large force of Spanish troops was mustering upon the frontier. Under these circumstances the regency, after losing some time in fruitless negotiations at Madrid, claimed the aid of England, which was frankly and promptly granted. Five thousand British troops were immediately embarked, the first division of which arrived in the Tagus on the 25th of December 1826. The course of events rendered it unnecessary for them to encounter the rebels in the field. Home affairs were discussed with the same want of keenness. On the 5th of March the House of Commons refused to entertain the question of Catholic emancipation, by a majority of four. Notices of one motion on the subject, and another for the repeal of the test act, were withdrawn immediately after the instalment of Mr Canning in the premiership, lest a premature collision between him and his new allies should be brought about. Mr Hume's motion for the repeal of Lord Castlereagh's act against cheap publications was smothered by the voluntary absence of the Whigs, aided by the apostacy of Sir James Scarlett and of Sir Robert Wilson. Such was the aspect of affairs when the fate of the nation was confided to the guardianship of the Duke of Wellington.

Lord Goderich had no sooner resigned than the king sent for the Duke of Wellington, and commissioned him to form an administration with himself at its head. His Grace immediately entered into communication with Mr Peel and others of Lord Liverpool's ministry who had seceded on the elevation of Mr Canning. The new government was speedily constructed. The Whigs were dismissed, the friends of Mr Canning remained in office, and the leading members of Lord Liverpool's cabinet return-

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The public were not satisfied at seeing the pertinacity with which Mr Huskisson and his friends clung to office. The duke indeed seemed to have retained them solely for the purpose of disgracing them in the eyes of the country; for, after forcing upon the House of Commons measures which obliged them, out of a regard to common decency, to declare they supported with reluctance, and merely for the sake of preserving unity in the cabinet, he took the opportunity afforded him by Mr Huskisson, when he voted for transferring the franchise of Penryn, convicted of corruption, to Birmingham or Manchester, to get quit of him, and with him of his retainers. Their places were immediately filled by creatures of the duke. The only other change made by the premier was his superseding the Duke of Clarence in the admiralty.

The Duke of Wellington found the country at peace, and looked up to as the head of constitutional Europe. The state of peace seemed to run little risk of being interrupted. The British troops dispatched to Portugal were still stationed there, but almost one of the first steps taken by the new minister was to withdraw them. The relation in which England stood to the Ottoman Porte was more delicate. From the commencement of the Greek struggle for independence till the year 1827 Britain had observed a strict neutrality between the Turks and their former vassals. The prolongation of the contest between the infuriated nations, however, promoted the growth of piracy to such a degree that the countries principally interested in the commerce of the Levant felt themselves bound to put an end if possible to the state of things in which it originated. These resolves were confirmed by their feelings of humanity, revolted by the Turkish cruelties. On the 6th of July a treaty was signed at London by the ministers of Britain, France, and Russia, declaratory of the necessity of putting an end to this sanguinary contest. The intervention of France and Britain was justified on the ground that their mediation had been requested by the Greeks. The object of the treaty was declared to be the effecting of a reconciliation between the Porte and its Grecian subjects. An armistice was to be insisted on from both parties as an indispensable preliminary to the opening of any negociation. Before the Porte could be brought to declare its sentiments with regard to this interference, Ibrahim Pacha, with the Egyptian fleet of ninety-two sail, arrived in the Morea. The British squadron under Admiral Codrington was cruising off Navarino when this armament approached. The Porte not having yet refused to accede to the armistice, the English admiral gave the Egyptian his choice of returning to Alexandria or entering Navarino, to which in that case he must confine himself. The latter branch of the alternative was accepted. Ibrahim took advantage of the absence of the British and French squadrons to put to sea on the 30th of September, but returned to Navarino on the approach of Admiral Codrington. Chafed by these obstructions, he attacked the Greeks by land, and ravaged the surrounding districts with fire and sword. It was immediately resolved by the British, Russian, and French admirals, to enter the harbour, in the hope that their imposing attitude would induce Ibrahim to desist from his savage devastation. This movement produced an attack from several of the Turkish ships; and after a vain attempt at explanation the action became general. The Egyptian fleet was completely dismantled. It was feared that the sullen silence with which the intelligence of this disaster was received at Constantinople might eventually break out into war. If it happened that there was little reason to dread a transition from the peace which Europe was enjoying, owing to the accession of a military premier, the confidence in the liberal policy of England was consider-

ably shaken. No decided steps of the minister justified the suspicions of his own country and Europe; but the lenient eye with which the proceedings of Don Miguel were regarded, and the disparaging terms applied to the action at Navarino in the king's speech, were laid hold of as unfavourable symptoms.

The first step taken by the new ministry after the meeting of parliament was to appoint a finance committee. The nomination of its chairman was the ostensible reason of that schism in the late cabinet which had caused its dissolution. On the 15th of February Mr Peel proposed "That a select committee be appointed to inquire into the state of the public income and expenditure of the united kingdom, and to consider and report to the house what further regulations and checks it may be proper in their opinion to adopt, for establishing an effectual control upon all charges incurred in the receipt, custody, and application of public money; and what further measures can be adopted for reducing any part of the public expenditure without detriment to the public service." The subject of inquiry to which the mover adverted as most worthy of the attention of the committee, and most likely to be productive of benefit, was the simplification of the public accounts. He alluded to the superior manner in which those of France and the United States were kept. This admission of the propriety of taking a lesson on such a subject from these countries, when viewed in connection with Mr Canning's declamatory opposition to Mr Brougham's motion respecting the droits of admiralty in 1820, was a most remarkable sign of the times. A minister who had opposed that very Mr Canning on the ground that he conceded too much to the innovating spirit of the age, was ready to advance before him in the path of innovation. Mr Peel's motion encountered no stronger opposition than arose from a proposal made by Mr Hume, that as one committee was inadequate to overtake the immense number of topics embraced by the proposed investigation, several should be appointed. Mr Brougham, with a view to reconcile the two plans, suggested the division of the committee into sub-committees, each taking a specific subject of inquiry. Ministers persisted in adhering to their original plan. Two measures of financial reform were submitted by the committee to the House of Commons during the session. The first related to the system on which government annuities were granted. Mr Percival's bill for regulating the granting of annuities of 1808 was calculated upon Dr Price's tables. So early as 1819 Mr Finlayson demonstrated to Mr Vansittart that, in consequence of the errors of these tables, the country was losing £8000 per month on the annuities granted by government. The subject was of course beyond the comprehension of that enlightened chancellor of the exchequer; but even his judicious and economical successor Mr Robinson paid no attention to the representation. The finance committee soon convinced itself that the annuities occasioned loss. Nothing could be done to alter those which had been already sold; but on the recommendation of the committee a bill was passed to suspend the operation of the act under which they had been granted, until a more correct system should be settled. The other measure recommended by the committee was the abolition of the office of lieutenant-general of the ordnance; but such a concession was not to be expected from the Duke of Wellington.

The next undertaking of the ministry was the settlement of the corn laws. The bill introduced with their sanction adopted the principle of that proposed by their predecessors, but increased the duties imposed. Mr Charles Grant, to whom was intrusted the task of bringing forward the measure, described the enactment as the

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of fruit of a compromise, and confessed that he thought it imperfect. Some other members of the government expressed a similar opinion. The bill was finally carried by large majorities.

While ministers were thus carrying into effect the measures originated by men with whom they had refused to co-operate, Mr Brougham was astonishing the nation with the display of a degree of legislative industry, of a mind at once indefatigable and comprehensive, that threw into the shade even his own exertions in the cause of education. On the 7th of February he directed the attention of the house to the state of the common law courts, and of the common law itself. He omitted equity in every branch, because he considered it as in some sort already taken up by parliament. For the same reason he passed over the criminal law. The inquiries pressed upon the house by Sir Samuel Romilly and Sir James Mackintosh had, it was true, been followed up timidly and on a narrow scale by Mr Peel; still the exertions of that minister were a pledge that something was to be done. The commercial law, as of modern growth, was comparatively pure. In regard to the law of real property, much had been done and more was hoped for. But to the conflicting jurisdictions, the inadequate and cumbrous forms of the common law courts, and the incongruities of the anomalous mass of consuetudinary and statutory law to which their judgments were conformed, the hand of reform had never yet been stretched out. Mr Brougham entered at great length into the constitution of the English courts, and the state of the law administered in them. For seven hours did his lucid arrangement and impressive earnestness fetter the attention of an assembly little qualified by habits or education to take pleasure in dry legal discussions. He pointed out the danger of paltry piece-meal reform, and concluded by moving an address to the throne, praying the appointment of "a commission for inquiring into the defects occasioned by time and otherwise in the laws of this realm, and into the measures necessary for removing the same." All debate on this motion was suspended until the 29th of February, when Mr Brougham substituted a modified resolution, which, with the assent of government, was unanimously carried. It prayed his majesty to take such measures as might "seem most expedient for the purpose of causing due inquiry to be made into the origin, progress, and termination of actions in the superior courts of common law in this country, and matters connected therewith; and into the state of the law regarding the transfer of real property." The field of inquiry was materially narrowed, and the prospect of efficient reform correspondingly diminished.

It has already been remarked, that the old aristocrats who rebelled against the presumption of a commoner aspiring to the chief honours of the administration, had felt themselves obliged, on their return to office, to pay homage to public feeling, and adopt the very line of policy which they had blamed in others. A more striking proof that they were merely allowed to hold the reins of government by sufferance was this year afforded in the success of the dissenters in asserting their rights. Lord John Russell moved on the 26th of February that the house should resolve itself into a committee for the purpose of taking into consideration the regulations of the corporation and test acts. A keen debate ensued, which terminated in a division, when two hundred and thirty-seven voted for the committee and a hundred and ninety-three against its appointment. This was the first successful blow aimed at the supremacy of the church of England since the revolution. The committee, notwithstanding the earnest entreaties of ministers for delay, agreed to a resolution approving of the instant repeal of the obnoxious acts. It was evident,

from the temper of the house, that concession was the only course left open for government. A bill founded upon the resolution was introduced and read a second time without opposition. When the motion for going into committee was made, Mr Peel rose and declared, that after the decision to which the house had come, he was prepared to dismiss at once from his mind every idea of adhering to the existing law. All that he asked for was, the substitution of a declaration that the predominancy of the established church should be secured for the sacramental test. His request being complied with, the ministers withdrew their opposition to the bill, which was speedily passed, notwithstanding the tears of the Earl of Eldon.

But a more serious exaction of popular right remained to be conceded by ministers; they had yet to purchase the endurance of that power to which they clung so desperately, at the price of a more glaring abandonment of their previous professions, of the adoption of a line of policy which left them to choose between the brand of previous insincerity or subsequent apostasy.

On the 8th of May Sir Francis Burdett moved for a committee of the whole house to take into consideration the claims of the Catholics, with a view to a final and conciliatory adjustment. The debate on this motion, which was continued for three evenings, ended in a majority of six in favour of the house going into committee. The resolution subsequently adopted was, that the time had arrived when a final settlement of the Catholic claims was expedient. A conference with the Lords was requested, for the purpose of ascertaining whether the sentiments of that house had undergone the same change with those of the Commons. The managers for the Lords having received the resolution, it was ordered to be taken into consideration by their house on the 9th of June. The discussion was entirely destitute of interest beyond what resulted from its being the first occasion on which the Duke of Wellington had expressed his opinion of the question at length. He grounded his opposition to concession entirely on expediency. The discussion would lead, he thought, to no practical result, and would tend only to disturb the public mind. He was desirous that the agitation of the country might be allowed to subside; and in the end it might be possible to do something, for he was most desirous of seeing the subject brought to an amicable conclusion. The motion of the Marquis of Lansdown, that the house should concur in the resolution which had been adopted by the Commons, was lost by a majority of forty-four.

While the claims of the Catholics stood in the legislative assemblies "like the swan's down at full of tide, which neither way inclines," the power which was to establish justice was carrying all before it in Ireland. The Catholics had paused to see what measures would be adopted by Mr Canning; but the elevation of the Duke of Wellington set them again in motion. The first opportunity of showing their determined spirit of opposition to him was afforded by the election for the county of Clare. Mr Vesey Fitzgerald, one of the members representing that county, had vacated his seat by accepting the office of president of the board of trade when Mr Charles Grant resigned. He had uniformly given his vote and influence in favour of emancipation; but he had identified himself with the Duke of Wellington, and was esteemed no longer worthy of confidence. Besides, a new mode of annoying government had suggested itself to the fertile invention of the Association. The laws might prevent a Catholic from taking his seat in parliament, by ordering that an oath should be tendered to him when he appeared to claim his right of sitting; but they did not forbid his being returned to serve. Taking advantage of this omission would afford the administration a test of the absolute sway which the Association exer-

Reign of George IV. cised over the tenantry of Ireland. Accordingly Mr O'Connell was proposed as a candidate for the honour of representing Clare in parliament, in opposition to Mr Fitzgerald. Emissaries of the Association were dispatched to every barony and parish of the county. The priests, with one exception, exhorted their flocks to vote for the advocate of their rights. A fund was prepared to pay up the arrears of all tenants distrained on account of the votes they might give, upon their finding security for repayment within a reasonable time. The day of election came. Mr Fitzgerald threatened the voters with the displeasure of their landlords. "Is it," he asked, "the payment of an arrear of rent by any body of men that will compensate to the unfortunate peasant for being deprived of his natural protector? Is it the payment of a few pounds that can compensate to the unfortunate peasant for the total alienation of his landlord? When the poor man is sick, and his family famishing with hunger, where will those men be, who, to gratify a public, perhaps a private, pique, burst the bonds which for years have bound together the landlord and tenant by what was considered an indissoluble tie? Alas! they will be far distant; and the unfortunate tenant will have nobody to look to for relief and comfort, except that landlord whom he is now called upon to desert." Mr O'Connell, on the other hand, dwelt upon the utter hopelessness of good legislation for Ireland so long as the people were not represented. He expatiated upon the impossibility of men achieving their rights who shrunk back from asserting them in person, and were willing to receive them from the bounty of a patron. He reminded his hearers of the unjust and unequal taxation under which they were labouring. He warned government that "the young blood of Ireland was in a ferment." The result of the election proved that the Catholics of Ireland had determined to rely upon their own efforts alone. The tenantry had awakened to a sense of their degraded situation; a race of paupers tolerated in the land because once in seven years they were of use, and allowed to perish of hunger and cold except when it became necessary to win their voices at an election. They were determined to assert their right to equal laws and legislative attention to their interests. This spirit was mainly owing to the efforts of the Association; and to the credit of the gentlemen composing that body, a spirit of forbearance from violence had likewise been fostered in the peasantry. Notwithstanding the violence of party feeling, the Clare election was attended with less outrage than the average of English county elections; and Mr O'Connell, notwithstanding a protest taken by some of the freeholders, was declared duly elected.

In the month of July the law which had been directed against the Catholic Association expired, and that body immediately re-assembled in its original form, to improve the victory it had gained in Clare. They issued an enumeration of four pledges to be required of every person who should at any time come forward as candidate for a seat in parliament. By the first he was to bind himself to oppose the Duke of Wellington's ministry in every thing until emancipation was conceded; by the second, to support religious and civil liberty; by the third, to procure the repeal of the sub-letting act; and by the fourth, to support reform in parliament. It was declared that every candidate refusing to take these pledges should be opposed by the men, influence, and funds of the Catholic Association. The next step was to organize local clubs. These bodies speedily spread throughout the three southern provinces, and embraced in their number many of the higher as well as of the lower orders. As far as possible, a club was instituted in every parish, consisting of the principal gentry, clergy, churchwardens, and such respectable far-

mers as could read. The club was to meet monthly. It was to keep a register of all electors within its bounds; to have every man in readiness for future elections; and to promote good order, perfect subordination to the laws, political knowledge, and liberal feeling, as much as possible. Every club was to report once in three months to the secretary of the Association, and to receive a weekly paper for a weekly contribution of three pence. Aggregate meetings of these clubs were held during the autumn in the provinces of Leinster and Munster, and countenanced by many of the aristocracy. The party feuds which raged among the peasantry, and occasioned unintermitting scenes of riot and bloodshed, were hushed at the bidding of the Association. The superfluous flow of Irish animal spirits was turned from the path of crime, and concentrated for the achievement of a great national conquest. Well might Mr Shiel say—"What has government to dread from our resentment in peace? An answer is supplied by what we behold. Does not a tremendous organization extend over the whole island? Have not all the natural bonds by which men are tied together been broken and burst asunder? Are not all the relations of society which exist elsewhere gone? Has not property lost its influence—has not rank been stripped of the respect which should belong to it—and has not an internal government grown up, which, gradually superseding the legitimate authorities, has armed itself with a complete domination? Is it nothing that the whole body of the clergy are alienated from the state, and that the Catholic gentry, and peasantry, and priesthood, are all combined in one vast confederacy? So much for Catholic indignation while we are at peace; and when England shall be involved in war—I pause; it is not necessary that I should discuss that branch of the division, or point to the cloud which, charged with thunder, is hanging over our heads."

The first symptom of intimidation on the part of the supporters of Protestant ascendancy, was Mr Dawson's speech at a public dinner in Londonderry on the 12th of August. This gentleman was a minister of the crown, brother-in-law of Mr Peel, the leader of the Anti-Catholic party in the House of Commons, and himself distinguished for more than ordinary vehemence in opposing Catholic claims. He now declared that his sentiments were changed; that there was but one alternative, either to crush the Association, or to settle the question; that the former was impossible, the latter inevitable.

The bigots of the Protestant ascendancy were on their part no less active. No sooner had the act against illegal societies expired, than the Orange lodges were revived, and the grand Orange lodge in Dublin again opened. New associations were formed in various parts of the country, but particularly in Dublin and Ulster, under the name of Brunswick clubs. A Protestant rent was collected in emulation of the Catholic rent. The mass of the Irish population seemed arrayed into two mighty and adverse armies. Men's minds grew heated, and the war-cry of religious intolerance rose fiercer and fiercer. The Protestant friends of emancipation began to hold back from the Association. The mania of Brunswick clubs spread to England, and the spirit first showed itself in Kent, at a great meeting on Pennenden Heath. The Catholics in England were few; the question of emancipation was there regarded with comparative indifference; and there was a possibility of the prejudices of the lower orders being inflamed, and the Catholic claims made a ground of blind enmity between the sister islands.

The silence and inactivity of ministers while this storm was gathering merited the taunt of Mr Shiel. "Meanwhile the government stands by, and the minister folds his arms as if he were a mere indifferent observer, and

the terrific contest only afforded him a spectacle for the amusement of his official leisure. He sits as if two gladiators were crossing their swords for his recreation. The cabinet seems to be little better than a box in an amphitheatre, from whence his majesty's ministers may survey the business of blood." The truth was, that the members of the cabinet were irresolute, and divided among themselves, and that the king was unmanageable. His pride was hurt at the opposition to his sovereign will, displayed in the proceedings of the Association; and his worn-out and irritable constitution was stung to frenzy by the interruption of his pleasures. The Duke of Wellington, in a communication to the Marquis of Anglesey, dated the 28th of September, told the lord-lieutenant that the Catholic question was "a subject of which the king never hears or speaks without being disturbed." On the 11th of November the duke wrote to the same nobleman:—"I cannot express to you adequately the extent of the difficulties which these and other occurrences in Ireland create, in all discussions with his majesty. He feels that in Ireland the public peace is violated every day with impunity, by those whose duty it is to preserve it, and that a formidable conspiracy exists, and that the supposed principal conspirators—those whose language and conduct point them out as the avowed principal agitators of the country—are admitted to the presence of his majesty's representative in Ireland, and equally well received with the king's most loyal subjects." Again, on the 19th of November:—"I might have at an earlier period expressed the pain I felt at the attendance of gentlemen of your household, and even of your family, at the Roman Catholic Association. I could not but feel that such attendance must expose your government to misconstruction; but I was silent, because it is painful to notice such things. But I have always felt, that if these impressions on the king's mind should remain, and I must say that recent transactions have given fresh cause for them, I could not avoid to mention them to you in a private communication, and to let you know the embarrassment you occasion."

The silence and inaction of the duke, circumstanced as he was, were unavoidable. They tended, however, to precipitate the final issue. Dr Curtis, the Catholic primate of Ireland, had long cultivated an intimacy with the Duke of Wellington, which had its origin in some important services rendered to the army in Spain, the doctor having held a high office in the university of Salamanca. He availed himself of the footing on which he stood with the premier to address to him a letter on the state of the country, and the importance of settling the Catholic question. The duke's reply was in these words:—"I assure you that you do me but justice in believing that I am sincerely anxious to witness the settlement of the Roman Catholic question, which, by benefiting the state, would confer a benefit upon every individual belonging to it. But I confess that I see no prospect of such a settlement. Party has been mixed up with the consideration of the question to such a degree, and such violence pervades every discussion of it, that it is impossible to expect to prevail upon men to consider it dispassionately. If we could bury it in oblivion for a short time, and employ that time diligently in the consideration of its difficulties on all sides (for they are very great), I should not despair of seeing a satisfactory remedy." A copy of the duke's letter was forwarded to Mr O'Connell, and received by him and the Association as a declaration that the minister was no longer unfavourable to the Catholic claims. A copy of the letter was likewise transmitted to the Marquis of Anglesey. In his reply to Dr Curtis the marquis pointed out that the duke could only be considered as wavering in his previous opinions; advised the adoption of such lan-

guage as might further conciliate him; and earnestly dissuaded from every appeal to brute force. The most remarkable passage in the letter was the following:—"I differ from the opinion of the duke, that an attempt should be made to bury in oblivion the question for a short time. First, because the thing is utterly impossible; and next, if the thing were possible, I fear that advantage might be taken of the pause, by representing it as a panic achieved by the late violent re-action, and by proclaiming, that if the government at once and peremptorily decided against concession, the Catholics would cease to agitate, and then all the miseries of the last years of Ireland will have to be re-acted. What I do recommend is, that the measure should not for a moment be lost sight of—that anxiety should continue to be manifested—that all constitutional (in contradistinction to merely legal) means should be resorted to to forward the cause; but that, at the same time, the most patient forbearance—the most submissive obedience to the laws—should be inculcated; that no personal and offensive language should be held towards those who oppose the claims." This letter was produced at a meeting of the Association, and received with the warmest encomiums. The next wind that blew from England brought the mandate recalling the Marquis of Anglesey, and appointing the Duke of Northumberland to succeed him. The rage of the Catholics was unbounded, as their hopes had been premature. The storm howled more loudly than ever.

Wellington's resolution was at last fixed. It may be that pride had some share in prompting his resolves. It was known, or believed, that in his own person he had no great objections to concede what was claimed by the Catholics; and he was not a man to defer to the prejudices of others, however high in station, although he might to his own. The danger was too imminent to allow him to hesitate longer. Having secured the assent of his colleagues, and wrung his slow leave from the king, he prepared to force upon parliament a measure which it had often with seeming loathing rejected. The session of 1829 was opened on the 5th of February by a speech from the throne, which contained the following unwonted expressions:—"His majesty recommends that you should take into your deliberate consideration the whole condition of Ireland; and that you should review the laws which impose civil disabilities on his majesty's Roman Catholic subjects. You will consider whether the removal of these disabilities can be effected consistently with the full and permanent security of our establishments in church and state, with the maintenance of the reformed religion established by law, and of the rights and privileges of the bishops and of the clergy of this realm, and of the churches committed to their charge. These are institutions which must ever be held sacred in this Protestant kingdom, and which it is the duty and determination of his majesty to preserve inviolate. His majesty most earnestly recommends to you to enter upon the consideration of a subject of such paramount importance, deeply interesting to the best feelings of his people, and involving the tranquillity and concord of the united kingdom, with the temper and the moderation which will best insure the successful issue of your deliberations." The Anti-Catholics were not taken by surprise, for it had been whispered about, a few days before the meeting of parliament, that ministers intended to recommend concessions to the Catholics. But they were not yet sufficiently masters of the course intended to be pursued by the duke to organize an effective opposition, and their first burst of discontent is unworthy of being recorded.

The first measure of the ministry was one of punishment to the sturdy beggars whose importunity had ex-

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torted their charity. The Catholic Association was denounced in the king's speech as dangerous to the public, and inconsistent with the constitution. This flourish of trumpets was followed up by a bill, which Mr Peel introduced on the 10th of February, to terminate the existence of the Association. He proposed to give to the lord-lieutenant, and to him alone, the power of suppressing any association or meeting which he might think dangerous to the peace, or inconsistent with the due administration of law; together with the power of interdicting the meeting of any assembly of a similar character, of which previous notice had been given. In case it should be necessary to enforce the provisions of the law, the lord-lieutenant was authorized to select two magistrates, for the purpose of suppressing the meeting, and requiring the people to disperse. Finally, every meeting and association which fell under the provisions of the act were prohibited from receiving and placing at their disposal any monies, by the name of rent, or any other name. The operation of the act was limited to the end of the then next session of parliament. This bill met with no opposition. The friends of the Catholics regarded it as a part of the system of emancipation—as a concession to the wounded feelings of men in power. Their adversaries were pleased even with this dying blow at the Association. Several members who voted felt themselves called upon to apologise for supporting the bill; whilst others taunted them for not having introduced such a measure before. It received the royal assent on the 5th of March; but the Association had already declared itself dissolved. The last blow struck for the gratification of offended vanity was lost in the empty air.

On the same day that the bill aimed at the Catholic Association received the royal assent, Mr Peel moved in the House of Commons that the house should resolve itself into a committee on the laws which imposed disabilities on the Catholics. A call of the house had been moved for that day, and the consequence was an unusually crowded attendance. The speech with which the home secretary prefaced his recommendation of the ministerial measure had two remarkable features. In the first place, every fact that he stated as influencing the decision to which he had come, must have been known for years, or he must have been unfit for his office. In the second place, while confessing that the object of the measure was to mediate between contending interests, he conceived it necessary for the honour of government to affect a stern disregard of all. His reasons for yielding to the Catholic claims were,—That the evils of divided councils were palpably so great, that something must be done to form a government with one common opinion on the subject; that a united government must either grant further political rights to the Catholics, or deprive them of those they already possessed; and that the latter alternative was impossible. Having made up their minds to bring back the Catholics within the pale of the constitution, ministers wisely brushed off all the incumbrances with which the concession had from time to time been surrounded, with the view of assuring alarmists. The great object of the measure was to abolish civil distinctions, and establish equality of civil rights. The Catholic, when promoted to office, was only called upon to swear allegiance in the usual terms; to disclaim the deposing power of the pope; and to abjure any intention of employing his privileges to weaken the Protestant religion or government. The only offices from which Catholics were excluded were that of lord-lieutenant of Ireland, that of lord high chancellor, and appointments in any of the universities, colleges, or ecclesiastical schools. No official insignia were to be borne to a Catholic place of

worship; no Catholic prelate was to assume the name and title of any dignitary of the church of England; and the names and numbers of the individuals composing monastic societies were to be registered. Making allowance for the necessity of gilding the pill in order that it might be swallowed, the measure was as liberal as could be desired. It was, however, beyond the power of the narrow-minded faction into whose hands fortune, in one of her freaks, had placed the office of effecting this great act of justice, to have kept it pure from every indication of their own want of magnanimity. The provision that the oath recited in the act, and no other, should be taken by a Catholic, was expressly limited to the case of "any person professing the Catholic religion who shall, after the commencement of this act, be returned as a member of the House of Commons." This specification was evidently levelled against Mr O'Connell, who had been returned for Clare *before* "the commencement of this act;" and was worthy of the temper that punished the Catholic Association at the very moment it confessed that that body had demanded no more than justice. Ministers had been terrified into an honest action, and were determined to show their resentment by performing it with as bad a grace as possible.

The burden of defending the measure fell upon the recently-converted ministerialists; the old and tried friends of emancipation contenting themselves with throwing in an occasional word of encouragement to their new allies. The line of argument adopted by all was much the same as that made use of by Mr Peel. The opposition was characterized rather by a dogged and sullen pertinacity, than by debating talent. The speakers had followed the lord of the ascendancy; and the only things that enlivened the dulness of the minority were some savage sneers at the deserters. The main argument relied upon was, that a majority of the nation was opposed to concession. Ministers were repeatedly challenged to appeal to the sense of the nation by a dissolution of parliament. They who urged such reasons knew right well, that as parliament was constituted, a new election would not have given the voice of the nation. They knew that even though England and Scotland had been bigoted enough to wish to rivet the fetters of the Catholics, Ireland had still a right to appeal from their decision. Ireland was all but unanimous on the question;—Ireland was the principal party interested;—Ireland had assented to the union under the impression that emancipation was to be conceded;—Ireland had a right, if it was withheld, to demand the repeal of an alliance into which she had been inveigled under false pretences, in order, after arranging this domestic matter, to re-unite herself on equal terms to England. Parliament was certainly not the fairest tribunal; but, in the circumstances of the case, it was the best that could be had.

The majority in the committee, three hundred and forty-eight for the motion, and a hundred and sixty against it, decided the fate of the measure in the Commons. No important variation in the relative numbers occurred during the remaining discussions, neither was any new argument adduced. The speakers came forward for the purpose of recording their own opinions, not with the hope of influencing those of others. The bill was carried up to the Lords, and read a first time on the 31st of March.

In this house the demands of the Catholics had hitherto met with the most determined and uniform resistance. Its members were men of high feelings, of personal honour, and independent circumstances. They were contemplated by the panegyrists of the constitution as the representatives of what was permanent in the English frame of government, and as the check upon the over-hasty resolves of

Reign of George IV. of a popular assembly. Yet they evinced as much haste and dexterity in following the veering inclinations of the minister as their humbler colleagues in the task of legislation. On the 11th of June 1828 a majority of forty-four refused even to entertain the question of the Catholic claims. On the 10th of April 1829 a majority of a hundred and four passed a bill granting every thing that the Catholics asked for. The debates were equally lengthy and unsatisfactory with those in the lower house. The bill received the royal assent on the 13th of April.

The bill which admitted Catholics to both houses of parliament, and to almost every office of political power, trust, and emolument, was accompanied throughout its progress by another bill for disfranchising the whole body of forty-shilling freeholders in Ireland. This measure, as described by Mr Peel, restricted the possession of the elective franchise to the possessors of a real ten-pound freehold. This restriction did not extend to corporate towns; for had the franchise been raised within their jurisdictions to ten pound, the corporations could have overpowered the public voice by their right to make freemen. The bill fixed a day for the opening, in every county in Ireland, of a *bona fide* register of ten-pound freeholds. An act of more flagrant injustice was never perpetrated. The landlords finding that the serfs, whom they had bred for electioneering purposes, had emancipated themselves, threw them carelessly away. The wealthier Catholics had served their own purposes, and abandoned those who had fought their battles. The Irish forty-shillings freeholder had as good a title to his elective franchise as the proudest nobleman to his barony. He might be all that his calumniators represented him, but the fault lay in the system under which he was born, and in the ambitious landlords who had made it an engine to serve their own selfish purposes. He was punished for having rescued himself from the degradation of being a mere unthinking tool. Lords Duncannon and Palmerston, and Mr Huskisson, deserve to be had in remembrance for having raised their voices against this filching of men's rights. Only seventeen members voted against the bill in the Commons, and scarcely a murmur was heard from Ireland when it passed into a law. And thus a question which had vexed the nation for half a century was set at rest.

No other question of importance succeeded in arresting the attention of parliament during this agitated year. Even the budget was hurried over without its due allowance of wrangling. On the 24th of June parliament was prorogued, in order that the nation and the government might have time to reflect upon their novel situation.

The ceding of the Catholic claims was the last important act of the reign of George IV. The ministers gained by this desertion of their professed principles what every body of men adopting a similar line of conduct may reasonably expect, the enmity of their former friends, and a cold distrustful toleration at the hands of their former opponents. The country was partially disquieted during the autumn and winter of 1829. The labourers were suffering in many places from want of employment, and distress to a considerable extent was insinuating itself among the agricultural classes. England's productive powers continued unabated, and the prevalence of want showed that there was something wrong in her internal arrangements, interfering with the natural tendency of wealth to diffuse itself. In Ireland public tranquillity was far from being re-established, nor was such a consummation reasonably to be hoped for from the redress of one grievance alone in a country which had been governed for centuries by men ignorant of its wants and feelings. The boon of emancipation had been attended, as we have seen, by an act of injustice and a gratuitous insult. The former was

scarcely remembered in the hour of triumph, but it afforded a topic for declamation when the hour of agitation should arrive; and the latter sent back to Ireland, as the avowed and embittered enemy of government, the man who had more power than any other over popular feeling. O'Connell's progress through Ireland was a continued triumph. His re-election for Clare was not contested. And wherever he went he held out ministers to the popular odium, recounting all their misdeeds, real or imaginary, and appealing in turns to every passion that could be supposed to animate the peasant. The Orangemen, on the other hand, galled by the loss of their ascendancy, continued to vociferate empty menaces, which had at least the effect of producing irritation. The waves of popular hatred and prejudice continued to dash after the storm that raised them had blown over.

Amid all this trouble a conviction began to gain ground that ministers were inadequate to the task of holding the reins of government. It was apparent that they had chalked out for themselves no system to which to square their conduct. They undertook nothing of their own accord, and they adopted every suggestion. Nor was this strange. With the exception of some inferior officials, men trained in the discharge of routine duties, but who could only discharge a task prescribed to them, there was not one man among them who had a knowledge of public business. The leaders were the remnant of that imbecile aristocratic faction who had revolted at the idea of following the lead of a *parvenu* like Canning. They believed the honours of the state to belong to them in virtue of their birth; they managed to secure them by influence and underhand intrigue; but they could not use the power which they had succeeded in acquiring. Masters of their wishes, they gaped idly around, asking what they were to do next. The dilemma in which they had involved themselves was soon visible to every eye, and its effect was to revive dormant feelings. At the commencement of the reign of George IV. parliamentary reform was loudly called for by two bodies of men; by the Whigs, with whom the belief of its necessity partook largely of the character of a theoretical tenet; and by the radicals, who, without correct or extensive views, felt that something was wrong, and stumbled upon the remedy. The conciliatory policy of the cabinet after the accession of Mr Canning deluded the nation with the hope that an efficient and enlightened government might be obtained even under the old system; and the cry of reform was stilled for a time. But the intrigues by which it was sought to keep Mr Canning out of the premiership, and the success with which they were employed after his death, revived the conviction that an enlightened ministry, acting for the national good, must remain weak, unless, by parliamentary reform, the body of the people obtained a more direct control over the executive. This spirit, to which subsequent events soon imparted a more determined character, was rapidly spreading when parliament re-assembled in February 1830.

The ministers were conscious that they did not command a majority of the house. The old Tories stood in an attitude of avowed hostility. The Whigs lent a patronising but uncertain support. The Duke of Wellington, however, flattered himself that the incompatible principles of these two parties would keep them from coalescing against him. He dreamed of receiving alternate assistance from both, and, by playing off their mutual jealousy, of avoiding the necessity of throwing himself into the arms of either. Thus situated, his conduct was marked with the same tinge of feebleness as during the preceding session. When any measure to which he was averse was energetically pressed upon him, he evaded the appearance of a defeat by introducing one slightly varied in form, but

Reign of George IV. of the same tendency. On the 12th of February, Sir James Graham moved a resolution to the effect—"That whereas subsequently to the act of the 37th George III., by which a suspension of cash payments was effected, large augmentations had taken place in the salaries and pay of persons in civil and military employments, on account of the diminished value of money; and whereas the alleged reason for such augmentations had ceased to operate, in consequence of the passing of 59th George III., which restored a metallic standard of value; it was expedient, in order to relieve the country from its excessive load of taxation, to revise our present system of expenditure, for the purpose of making every possible reduction that could be effected, without violation of good faith or public justice." This motion was opposed by ministers; but, in the temper of the house, it was judged expedient merely to substitute a motion to the following effect:—"That whereas his majesty has been graciously pleased, &c. to assure the house that he would cause an inquiry to be made into all the departments of the civil government, with a view of reducing the number of persons employed, and the amount of the salaries paid; resolved, that an humble address be presented to his majesty, that his majesty might be graciously pleased to lay before the house an account of the progress which had been made in such inquiry: also, that it was the opinion of the house that, in every establishment of the state, every saving ought to be made consistently with the due performance of the public service, and without the violation of existing engagements." Ministers did not insist upon taking the lead; they only asked leave to walk foremost. So that they rode on the crest of the billow, they cared not in what direction it was impelled.

A variety of subjects forced on the attention of parliament, confirmed the fact that men's minds were full of doubts and questionings. Lord Stanhope moved for an inquiry into the state of the nation. Mr P. Thomson moved for a committee to revise the whole system of taxation. The question of the East India charter was unavoidably brought forward. Parliamentary reform was suggested in the most various forms, and from the most unexpected quarters. The Marquis of Blandford, once a violent Tory, proposed, on the 18th of February, the appointment of a committee by ballot, to take a review of all the boroughs and cities in the kingdom, and to report to the home secretary such as had fallen into decay or forfeited their right to representation. That minister was immediately to relieve these places from the burden of sending members to parliament in future, and to fill up the vacancies by towns hitherto unrepresented. The elective franchise was to be enjoyed by all persons paying scot and lot. The plan of the marquis contemplated the revival of the custom of paying wages to members in parliament. Lord John Russell moved, on the 23d of the same month, for leave to bring in a bill to enable Leeds, Manchester, and Birmingham, to return members to the House of Commons. Mr O'Connell brought his plan of reform before parliament on the 28th of May. He moved for leave to bring in a bill to establish triennial parliaments and vote by ballot, and extend the franchise to every man who paid a tax or was liable to serve in the militia. The same day Lord John Russell submitted two resolutions to the house, first, "That it was expedient the number of representatives in the house should be increased;" and secondly, "That it was expedient to give members to the large manufacturing towns, and additional members to counties of great wealth and population." All these schemes were negatived by large majorities, and their discordant nature showed that the reformers,—for the old parties of Whigs and Tories had now well nigh merged into reformers and anti-re-

formers,—had not come to a right understanding with each other. But taken in connection with the voice of the public out of doors, they showed that the cry for reform, silenced for a while, was again rising with increased urgency, and that an extensive change in the constitution of the House of Commons could not much longer be evaded.

At this ominous crisis George IV. breathed his last. He had long been in an infirm state, but no immediate danger was anticipated till the commencement of April. On the 15th of that month the first bulletin was issued. He continued to grow weaker, and latterly the slightest exertion became intensely painful. A message was sent to both houses of parliament on the 24th of May, stating that his majesty found it painful to sign with his own hand documents which required his sign-manual, and requesting parliament to provide for the temporary discharge of that function of the crown. A bill was immediately passed, allowing the sign manual to be adhibited by a stamp. The disease continued to run its course, and upon the 26th of June his majesty expired.

George IV. had no public virtues. By those who knew him he is said to have possessed a taste for the arts and for letters. The only instances given of his attachment to the latter indicate a pretty correct estimate of the merits of some works of lighter literature. The buildings erected under his patronage evince an utter absence of the sense of architectural beauty and grandeur. In rich and voluptuous decoration of apartments he excelled. His taste in painting does not seem to have gone beyond a feeling of neat execution, and a recognition of strongly-expressed vulgar character. Neither science, literature, nor art, found in him an active patron; and as little interest did he take in affairs of government. He was in habits of intimacy at one time with the leading Whigs; but finding their opponents firmly seated in power, he allowed them to remain there. The character of his minister, and the course of policy adopted by him, was a matter of the most perfect indifference, so that the royal repose was left undisturbed. An intense and wilful self-indulgence and deep-rooted personal vanity regulated all his actions. It was this that made him bestow more thought upon his coronation dress than upon the government of three kingdoms. He could enjoy the pageantry of monarchy, but could not comprehend its duties. It was this that made him hazard the peace of the empire to wreak his spite on a woman. It was this that made him so pertinaciously resist concession to the Catholics. He looked upon agitation as a personal affront. The utmost that his adulators have ventured to say in his behalf is, that his manners were refined. Alternately hooted and cheered, he never possessed the affections of his subjects. In private life he might have been an agreeable companion, little thought of when absent; as a king, he was nothing, or worse—an expensive cumberer of the royal seat.

Yet his reign was not uneventful. It commenced at the close of the extensive wars which had desolated Europe. The nation, no longer engrossed with its own exploits in foreign lands, but deranged as to its internal economy by a long-continued struggle, was forced to turn its eyes inwards. The consequences of this reflex study developed themselves slowly. First the government shook itself free from the alliance of despots; and next endeavoured to check the gambling spirit of trade, by giving a healthy and substantial character to the currency. A more frank and liberal intercourse with other nations was encouraged. Retrenchment of state expenditure, and an equitable apportionment of national burdens, were loudly demanded, and in outward show at least attempted. The old inadequate customs of the law began gradually to recede before a more rational system. The unalienable right of a nation to regulate its internal concerns without

of foreign interference was recognised. It was not to be expected that such important changes could be effected without exciting individual discontent, and causing individual suffering. The consequent discussions led men to inquire into the distribution of power and privilege. The rights of citizens were warmly asserted. The equal political rights of all religious denominations were *conquered*. The adherents of rational principles of government felt their strength, and prosecuted their assaults upon antiquated prejudice and abuses with more vivacity. This period of preparation was terminated by the death of George IV. The seeds of future activity were germinating in silence. The unsettled state of men's minds was as a chaos, upon which the news of the expulsion of the Bourbons from France descended like an animating spirit. The huge mass heaved at once with the throes of new life. The first fruits have been the achievement of parliamentary reform.

CHAP. XX.

REIGN OF WILLIAM IV.

Accession of William IV.—Popularity of the new King.—No change made in the Ministry.—Dissolution of Parliament.—The Revolution of July in France.—Effect produced by it in Britain.—Parliamentary Reform.—Result of the Elections unfavourable to the Ministry.—Disturbed state of the Country.—Ireland.—Anti-Union Associations.—Distress and outrages in the English Agricultural Counties.—Demand for Reform.—Political Unions and Reform Associations.—Meeting of Parliament.—Speech from the Throne.—Debates on the Address.—Duke of Wellington's Declaration against Reform.—The King and Queen induced to decline dining at Guildhall on the Lord Mayor's Day.—Sir Henry Parnell's motion on the Civil List.—Ministers defeated.—Their Resignation.—Earl Grey authorized to form a New Administration, on the basis of making Reform a Cabinet Question.—Parliament adjourned till February 1831.—Decline of the outrages in the agricultural districts.—Punishment of the Rioters.—Meeting of Parliament.—Ministerial plan of Reform.—Its reception by the country.—Debate on Lord John Russell's Motion.—Leave granted to bring in Bills to amend the Representation of Scotland, England, and Ireland.—Bills introduced.—Debate on the Second Reading of the English Bill.—Second Reading carried by a majority of one.—General Gascoigne's Motion carried by a majority of eight.—Dissolution of Parliament.—Scene on this occasion.—Result of the Elections.—Bill re-introduced and carried through the House of Commons.—Debate on the Second Reading in the Lords.—Bill thrown out by a majority of forty-one.—Indignation of the country.—Proceedings of the Commons.—Parliament prorogued.—Riots at Derby, Nottingham, and Bristol.—Re-assembling of Parliament on 6th December 1831.—English Bill again introduced.—Debates.—Passed on 22d March 1832.—Carried to the House of Lords.—Read a second time by a majority of nine.—Adjournment of the House during the Easter Recess.—Great Public Meetings in all parts of the country.—Secret intrigues.—Meeting of the House.—Lord Lyndhurst's amendment carried.—Resignation of Ministers.—Lord Ebrington's Motion.—State of the Country.—Duke of Wellington undertakes to form a Cabinet on the principle of carrying the Reform Bills.—His utter failure.—Lord Grey recalled.—Subsequent discussions on the Bills.—Secession of the Opposition.

William IV. ascended the throne of Great Britain on the 26th of June 1830. The change of the monarch did not occasion any immediate change on the state of public affairs. The Duke of Clarence had accepted office under Mr Canning, and had been rather unceremoniously deprived of it by the Duke of Wellington; hence, some people argued that he would be unfavourable to his ministry. In the political world he was scarcely known. An old grudge existed against him from the time of the queen's trial. The Tories, who more than half feared his revolt, spread caricatured accounts of the proceedings at Bushy

House during his brother's illness. The plainness of the new king's manners, however, soon rendered him highly popular. He mingled with the people, and his familiar address and unostentatious appearance contrasted so strongly with those of the late king, that he completely won the affections of that part of the community which, as it is the first to deify a monarch, is also the first to cast him off again. No change, however, took place in the ministry. William IV. declared himself friendly to their policy, and determined to retain them.

They were, however, incapable of being much longer sustained in office, even by the royal support. The party which they had irritated by carrying the Catholic bill was strong in the Commons, and stronger in the Lords. The Whigs had lost confidence in the Duke of Wellington and his coadjutors, whose system of policy was temporising, calculated to keep themselves in power, but not to forward the business of the country. It was evident that every measure having in view the better organization of the state must be wrung from them, like Catholic emancipation, by demonstrations of power. War was in consequence declared against the cabinet, and prosecuted vehemently by the Ultra-Tories, but by the Whigs with more caution. The first question that gave rise to serious discussion was, whether the parliament, after voting such supplies as were immediately necessary, should be at once dissolved, or whether provision ought first to be made for a regency in the event of the king's demise before the re-assembling of that body. Ministers obtained a small majority after a violent debate. A few matters of business which could not be postponed were afterwards hurried through the house with little opposition, and on the 23d of July parliament was prorogued by the king in person; and being next day dissolved by proclamation, writs were issued for the election of a new one, returnable on the 14th of September.

A few days afterwards the news of the revolution, by which the elder branch of the Bourbons was finally expelled from France, reached England. The intelligence, as already mentioned, had a powerful effect. The delusion which the conciliatory policy of Canning had occasioned, and the belief that an enlightened and energetic government was attainable under the old rotten system of parliamentary election, had received a severe shock from the circumstances of his death. The liberal measures into which the Duke of Wellington had reluctantly been forced, had for a short time delayed the disabusing of the nation. But late events had shown that nothing was to be expected from him and the men of mere routine who formed his ministry. The longing for parliamentary reform returned with redoubled efficacy. Men were not prepared with any definite scheme, nor were they at once as to the principles on which they vindicated the justice of innovation. The news of the three days in Paris ripened men's views; they showed that wishes were useless while unproductive of action. The French received the homage of universal sympathy. This circumstance was turned to use by some active friends of liberty. Meetings were called in every important town to congratulate the freemen of France; and thus reformers were brought together, and taught how numerous a body they were.

All these circumstances operated unfavourably for ministers at the elections. Wherever the election was popular, the reformers supported a candidate of their own principles; and of the close burghs, with the exception of those commanded by government, a decided majority were in the hands of the Duke's adversaries. The suspicions under which his administration lay, of coquetting with Prince Polignac, added materially to his unpopularity. Not one candidate appeared on the hustings to claim the

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suffrages of the electors as a supporter of ministers. The general result of the election diminished by fifty the votes upon which the government could depend.

At the same time the disturbed state of the country, by showing the incapacity of government, went far to swell the ranks of its enemies. Ireland had not been pacified, because the concession of its claims had been accompanied by personal insult and perseverance in a hostile attitude. Emancipation had never been demanded by any reasonable man as a measure that could do good further than by allaying religious feuds, and bringing the nation to a temper in which an honest government might with rational hopes of success look for support in pursuing measures of reform. But, on every question that regarded Ireland, government evinced a hostile spirit, the growth either of ignorance or bigotry. The cry for the repeal of the union was again raised, and a society established, bearing the title of "The Friends of Ireland of all religious denominations." This body announced its determination to agitate till every one of its objects should be conceded. The most essential of these were, a repeal of the sub-letting act, a radical reform in the representation, and a repeal of the union. Mr O'Connell was at the time absent in England; and there being no other man of his party equally fertile in resources and undaunted in pertinacity, the lord-lieutenant easily suppressed the new association under the act passed along with that which admitted the Catholics to a participation in the privileges of the constitution. But no sooner did the dissolution restore O'Connell to Ireland than he engaged in re-organizing his adherents into an "Anti-Union Association." This society was likewise prohibited by proclamation of the lord-lieutenant, but was succeeded by the "Association of Irish volunteers for the repeal of the Union." Many who had hitherto acted with Mr O'Connell, felt the necessity of a legislative union with England, and took alarm at these proceedings. A numerous meeting, convened by the Duke of Leinster, declared their adherence to the union. After this step the lord-lieutenant's proclamation directed against the volunteers was obeyed, nor was the repeal of the union proposed at any of the elections as a test to candidates.

Even England began to rival Ireland in misery and disturbances. While parliament continued to sit, its table was covered with petitions, describing in the strongest terms the distress suffered by the lower classes engaged in agriculture. It was predicted that unless a change for the better took place it would be impossible to restrain them from outrage. The harvest was scarcely concluded when this prophecy was fulfilled. The disturbances began in the county of Kent. Threatening letters were dispersed throughout the county, machinery destroyed, money extorted, and barns and stack-yards set on fire. The commotions were the wild aimless efforts of men suffering almost beyond nature and without hope. Viewing the matter in this light, the first rioters apprehended were treated with a degree of lenity which encouraged fresh outrages. During October, November, and December, the riots increased in frequency and boldness, and spread from Kent into Hants, Wilts, Bucks, Sussex, and Surrey. The frame of civil society seemed breaking up, and a wild deluge of human passion, untamed by moral feeling, unchecked by law, threatened to overwhelm all.

With a nation apparently resolving into anarchy, and a government helpless and stubborn, there was no hope. Like sailors in a shipwreck, men began to search for something to cling to in the impending convulsion. The demand for reform was raised more clamorously than ever. Political unions and reform associations, having for their object the propagation of definite political principles, and a demonstration of the physical strength of the reformers, were

everywhere established. The most important of these bodies were the Birmingham union, the model of all the others; the great northern union, extending over the counties of Northumberland and Durham; and the Renfrewshire political union. But others of less note were to be found in almost every town and village in the kingdom.

Such was the threatening aspect of the country when parliament opened on the 2d of November. The speech from the throne contained no indications of the means by which ministers proposed to meet the threatening emergency. It was simply announced in regard to France, that "the elder branch of the Bourbons no longer reigned," and that "the Duke of Orleans had been called to the throne by the title of King of the French." The events in Belgium were branded with the title of "revolt." The disturbances among the peasantry were attributed to "efforts industriously made to excite discontent and disaffection." A determination was expressed to exert every means which the constitution had placed at the king's disposal for the repression of outrage. No distant allusion was made to that reform which the nation demanded as with one voice. The ministerial declaration showed that the Duke of Wellington, in proud ignorance, was determined to cling to a system whose props one after another had for years been dropping down.

Any doubt that remained upon this subject was removed by the debate which took place in the House of Lords when the address to the throne was moved. Earl Grey, adverting to the opprobrious designation applied in the king's speech to the Belgian revolution, observed,— "We ought to learn wisdom from what was passing before our eyes. He felt persuaded, that unless reform were granted, we must make up our minds to witness the destruction of the constitution. He had been a reformer all his life, and at no period had he been inclined to go farther than he would be prepared to go now, if the opportunity were offered." The Duke of Wellington's reply to this portion of this speech is only memorable by the declaration made in it, which occasioned his subsequent downfall. "The noble earl has alluded to something in the shape of a parliamentary reform, but he has acknowledged that he is not prepared with any measure of reform; and I have as little scruple to say, that his majesty's government is as totally unprepared as the noble lord. Nay, on my own part, I will go farther and say, that I have never read or heard of any measure up to the present moment, which could in any degree satisfy my mind that the state of representation could be improved or rendered more satisfactory to the country at large. *** I am fully convinced that the country possesses at the present moment a legislature which answers all the good purposes of legislation; and this to a greater degree than any legislature ever has answered in any country whatever. *** Under these circumstances I am not only not prepared to bring forward any measure of this nature, but I will at once declare, that, as far as I am concerned, as long as I hold any station in the government of the country, I shall always feel it my duty to resist such measures when proposed by others."

The tone assumed by the opposition in both houses after this haughty declaration convinced ministers of their rashness in venturing to meet such a parliament in an official capacity. Their embarrassment was increased in consequence of an injudicious manœuvre, intended to terrify the more timid of their opponents, by impressing them with an exaggerated notion of popular violence. The king and queen were to dine at Guildhall on the Lord Mayor's day; but, under the pretext that there was a conspiracy on the part of some abandoned characters to attack the Duke of Wellington, their majesties were induced to

retract their assent. This attempt, by stimulating the loyalty of the nation, and adroitly confounding the king with his advisers, to give greater firmness to a wavering government, failed signally. The ministers became ridiculous. The invectives of the opposition in parliament became more pointed and inveterate; and on the 15th of November Sir Henry Parnell moved "that a select committee be appointed to take into consideration the estimates and accounts presented by command of his majesty respecting the civil list." After a short debate ministers were left in a minority of twenty-nine in an unusually full house. Mr Hobhouse asked Sir Robert Peel whether it was the intention of ministers to retain their places after such an expression of the sentiments of the house, but received no answer. Next day the Duke of Wellington in the Peers, and Sir Robert Peel in the Commons, announced, that in consequence of the vote of the preceding evening, they had tendered, and his majesty had accepted, their resignations.

The king immediately authorized Earl Grey to form an administration upon the basis of making parliamentary reform a cabinet question. His lordship had refused his support to the Canning administration on the ground that its premier was opposed to reform. His son-in-law Lord Durham, Lord Althorp, the Marquis of Lansdown, and Lord John Russell, were tried adherents of the Whig party, and friendly to reform. These, with Lord Holland, may be regarded as the nucleus of the reform administration. Its ranks were filled up by Mr Canning's friends, who had gathered from the signs of the times the impossibility of longer withstanding those innovations which timidity of character or the prejudices of education had led them to oppose. The treatment which their leader had experienced at the hands of the high aristocratic party rendered them less averse to any measure that promised to sap its power. The Duke of Richmond was the only leading member of the old Tory party who accepted office under Earl Grey. Others of that party had joined, after the concession of the Catholic claims, in calling for reform; but their object was merely to raise a clamour against a political adversary, and they ceased the moment they saw there was danger of their request being granted. Mr Brougham was appointed lord high chancellor.

There was necessarily a suspension of business in parliament till the ministers who had vacated their seats by accepting office should be re-elected. By the time that they were all restored to their places, it was too late to think of maturing and developing their system of policy before the Christmas holidays. Accordingly, Earl Grey contented himself with declaring, that it was the intention of the cabinet to introduce a plan for the reform of the Commons House of Parliament. The regency bill was passed in conformity with the recommendation in the speech from the throne. And on the 23d of December 1830 both houses adjourned to the 3d of February; ministers having declared that a long interval was necessary to enable them to concoct that plan of reform to which they had pledged themselves on accepting office.

The interval of parliamentary exertion was an uneasy one for the country. The riots and outrages in the agricultural districts had begun to decline; but the duty of punishing the convicted transgressors of the law remained to be fulfilled. During the latter half of December and the beginning of January, upwards of eight hundred rioters were tried before special commissions. Of those against whom sentence of death was recorded, only four were executed; the rest were ultimately sentenced to various terms of transportation and imprisonment. Comparative tranquillity was restored; but the mischief that had been done was not amended, nor was a healthy confi-

dence between the lower classes and their employers restored.

Neither had the change of administration been entirely successful in restoring public confidence in the constituted authorities. The stern unbending adherence of Earl Grey and his immediate friends to the cause of reform was in their favour; but the country was determined to trust no man, and meetings were held in every county and town to petition for such an alteration of the elective system as might have a tendency to secure good government.

Parliament met, as appointed, on the 3d of February 1831. Ministers announced that their plan of parliamentary reform should be brought forward by Lord John Russell on the 1st of March. The interim was occupied by discussions on the arrangement of the civil list prepared by ministers, on the budget, and on a plan for reforming abuses in the court of chancery, proposed by the lord chancellor. On that evening accordingly his lordship explained the nature and extent of the ministerial plan. The general outline bore a marked resemblance to that of the measure brought forward on a former occasion by Mr Lambton, and thrown out by a manœuvre on the part of Mr Canning. The chief grievances complained of by the people, it was remarked by Lord John, were the nomination of members by individuals, and elections by close corporations, the limited extent of the elective franchise, and the expense of elections. With a view to do away with the two first-mentioned evils, in as far as regarded England, ministers proposed to introduce a bill proceeding upon the three principles of disfranchisement, enfranchisement, and extension of the right of suffrage. In order to reduce expense, they intended to recommend an alteration in the system of registering voters and of taking the votes at elections. The extent of disfranchisement deemed necessary to extirpate close and nomination boroughs went to deprive such places as had a population of fewer than two thousand inhabitants of their right to send any members to parliament, and to restrict such as had a population of only four thousand to one member each. Weymouth, which had previously returned four members, was to lose two of them. By this measure sixty burghs would be totally disfranchised, and forty-seven partially, exclusive of Weymouth. The number of members thus withdrawn would amount to 168. Ministers did not propose to fill up the former number of the House. Seven large towns, which had previously been wholly unrepresented, were to receive two members each. Twenty other towns, smaller in size, and of less importance, were to receive one member each. The metropolis was to be subdivided into four additional districts, which were to return among them eight members. An addition of two members was to be given to each of the twenty-seven largest counties, and each riding of the county of York was to return two additional members, and the Isle of Wight one. The distribution of the elective franchise through the country having been thus arranged, the next point to be settled was the persons to whom the right of voting should extend. The object of ministers was not to communicate the franchise to every subject, but at the same time to extend it so far that every man who persevered in habits of honest industry might fairly calculate upon being able to attain it. Non-resident voters, as productive of much expense and bribery, were deprived of their privilege. Every householder rated at ten pounds per annum, whether the house he inhabited were his own or rented, received the right of voting. In counties, the possession of copyhold property rated to the amount of ten pounds per annum, or a lease for twenty-one years of the yearly value of fifty pounds, likewise entitled to a vote. The last object contemplated by the ministerial

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plan of reform was the diminution of election expenses. With a view to prevent the disgraceful tricks frequently practised on the hustings, the most fertile source of expense, a list of all qualified persons in every parish was ordered to be prepared by the parish officers and church wardens. This list was to be placed on the church door, and at a certain period of the year the returning officer in towns, and a person appointed by the judge of assize in counties, was to hold a court for the purpose of hearing and deciding upon the claims of persons whose votes had been held objectionable. The list, as finally adjusted, was to be published, so that every person might obtain a copy, and was to serve as the election roll for the ensuing year. The duration of the poll was limited to two days in towns, and three in counties. The counties were to be divided into polling districts, so arranged that no voter should have to go more than fifteen miles in order to exercise his franchise. This ample measure of reform for England it was proposed to follow up by similar measures applicable to Scotland and Ireland. With regard to the former country, it was to receive five additional members. Twenty-two counties were to return one member each. The remaining twelve were to be conjoined into pairs, returning one each. Edinburgh and Glasgow were each to return two members; while Aberdeen, Paisley, Dundee, Greenock, and Leith, were each to return one member. The remaining thirteen districts of royal burghs were to return each one member, as before, but the elective franchise was transferred from the delegates of the town councils to the inhabitants possessed of a certain qualification. The qualification required in burghs was the occupancy of a dwelling-house of ten pounds per annum; in counties, the ownership of land or houses worth ten pounds a year, or holding as a tenant at the annual value of fifty pounds on lease for nineteen years or upwards. The reform of the Irish system was much less extensive, because, as was alleged, the representation of that country had been entirely re-modelled little more than thirty years before, at the time of the union. It was proposed that occupancy to the amount of ten pounds per annum should give the right of voting for burghs, and that Belfast, Waterford, and Limerick should each return an additional member. It was calculated that by this great measure 500,000 persons would be added to the national constituency, all having a stake in the country, and so dispersed over its extent as to place them beyond the influence of any faction.

This bold measure produced an electrical effect upon parliament. The sincere reformers hailed its searching character as indicative of the honesty of its authors, and fruitful of good to the nation. The timid wavering reformers stood aghast, and so did all the champions of old abuses. Mr Hume, a fair representative of the radical party, said the plan of ministers had so far exceeded his expectations, that he felt himself bound to admit that they had completely redeemed the pledge which they had given. Mr Macaulay, speaking the sentiments of the young and highly educated liberals, thought it "a great, noble, and comprehensive plan." Lord Ebrington, the model of a sturdy, sagacious, independent country gentleman, "hailed the measure, as it gave due weight to every interest, and was calculated to stem the torrent of corruption." Sir R. Inglis, as the organ of the high-church party, declared that the "plan of the noble lord meant revolution, not reformation." Sir Charles Wetherell, as representative of the legal formalists, denounced the measure as "a corporation robbery." The debate on Lord John Russell's motion for leave to bring in a bill to amend the representation of the people of England, was kept up with extreme keenness for seven successive meetings, but terminated on the 9th of March without a division. Leave

was on the same evening given, after a short discussion, to bring in bills to amend the representation of the people in Scotland and Ireland. The English bill was introduced by Lord John Russell on the 14th of March, and read a first time; the same step was taken with the Scotch bill by the Lord Advocate on the 15th, and with the Irish bill by Mr Stanley on the 24th. The discussion on the second reading of the English bill was characterized by a yet more fierce and inveterate spirit of hostility to all reform, than that which took place when the measure was first propounded: After a debate which lasted for two evenings, the motion that the bill be read a second time was carried by a majority of one. The opposition, therefore, went into committee with a fair prospect of being able to mutilate, and finally defeat the bill. Their first demonstration was a declaration, moved by General Gascoyne, "that it is the opinion of the house that the total number of members returned to parliament for England and Wales ought not to be diminished." The General's motion was carried by a majority of eight; a result which intimated to ministers that they had not such a hold upon the house as afforded them the most distant chance of carrying the measure by which they stood pledged to stand or fall. In order to appreciate the propriety of the line of conduct adopted by them on this occasion, it will be necessary to look to the effect which the promulgation of the ministerial plan had produced upon the national mind.

The boldness of the measure, so much beyond what had been expected, had conciliated the radical party, of whom the unions may be considered as the representatives. Even the vital questions of the shortened duration of parliaments, and a secret mode of taking the votes, were postponed by one consent, lest any difference of opinion should endanger the success of so efficient a measure. The popular sense accepted the bills as satisfactory, and the nation crowded to their defence. Riot and destruction ceased; for every man was intent upon the prospect held out of good government and better days. The tables of both houses were loaded with petitions in favour of the bill. The more apparent it became that the Commons would not pass it, the more intense became the affection manifested by the people for its provisions. It was evident that they regarded it as the standard to which they were to look as a rallying point amid the whirls and eddies of the headlong fight in which they were engaged. With the people in such a mood, and the king remaining true to his promises, the ministers were quite safe in throwing themselves upon the sense of the electors by a dissolution of parliament.

But the intimation that such a step was in contemplation was received with anger and alarm by the opponents of reform. They were not prepared for so determined a measure; and notwithstanding their declarations that the bill was contrary to the national wish, they knew that the people were against them. The exhibition of petty anger which took place in both houses, but particularly in the Lords, on the day of dissolution, baffles all description. An eye-witness speaks thus: "A hope had remained that the project of stopping the king's speech, and interposing an address, might succeed. That hope rested entirely upon the speech being read by the chancellor or by his majesty in person. Suddenly the thunder of the guns was heard to roar, breaking the silence of the anxious crowds without, and drowning even the noise that filled the walls of parliament. In the fulness of his royal state, and attended by all his magnificent court, the monarch approached the House of Lords. Preceded by the great officers of state and of the household, he moved through the vast halls, which were filled with troops in iron mail, as the outside courts were with horse, while the guns boomed, and mar-

of tial music filled the air. Having stopped in the robing chamber in order to put on his crown, he entered the house and ascended the throne, while his officers and ministers crowded around him. As soon as he was seated, he ordered the usher of the black rod to summon the Commons; and his majesty, after passing some bills, addressed them. By those who were present the effect will not soon be forgotten, of the first words he pronounced, or the firmness with which they were uttered, when he said, that 'he had come to meet his parliament in order to prorogue it with a view to its dissolution!' He then with an audible voice commanded the lord chancellor to prorogue, which being done, the houses dispersed, and the royal procession returned amidst the hearty and enthusiastic shouts of thousands of the people."

In the state of the national mind, the result of the elections could not be doubted. "The bill, the whole bill, and nothing but the bill," was the war-cry of the reforming electors; and to this the candidates were called to pledge themselves at every open election. The Duke of Newcastle, who had formerly returned two members for Newark, and two for the county of Notts at large, found his interest reduced to four rotten borough seats, where no man could interfere with him. The Duke of Beaufort's brother, and his eldest son, both justly popular noblemen, were flung out, solely because they were opposed to reform. The Duke of Rutland's nominees were rejected in his own county. In Northumberland the minister's son, who had not ventured to enter the field at the preceding election, was returned, notwithstanding the indolence of his friends. In short, out of eighty-two county members, England returned seventy-six pledged to support the bill; the members for the cities and great towns were for it to a man. Ireland returned a great majority, and even Scotland a majority of friends to reform.

The success of the ministerial measure in a House of Commons so constituted was beyond a doubt. Its enemies, however, exerted every device to delay and baffle the English reform bill. By trifling motions pushed repeatedly to division, the opposition succeeded in retaining the English bill in the House of Commons from the 15th of June till the 22d of September, when it was finally agreed to by a majority of one hundred and nine.

The eyes of the people followed it with anxiety to the House of Lords. It struck at the roots of an influence which that body possessed over the house which ought to have been the representative of the people; and this influence, it was known, a majority of their number were resolved to preserve. When submitted to them, the bill was brought before a tribunal of prejudiced and interested judges. Its fate, if left to the House of Lords as then constituted, was sealed before the debate had begun. The nation knew this, and loudly and urgently was the necessity of a new creation of peers pressed upon ministers, but in vain. Earl Grey had determined to give his noble colleagues an opportunity of dealing justly by the nation.

The debate on the second reading commenced on the 3d of October, and continued during that and four succeeding evenings. The arguments brought forward against the bill were various and contradictory. After this long and fatiguing debate, the Peers of England, by a majority of forty-one, decided, in opposition to a majority nearly triple that amount of the House of Commons, and to the almost unanimous voice of the nation, that a system of cunningly veiled oppression and corruption should be perpetuated.

The indignation of the country was great, although happily prevented from breaking out into open violence by the firmness of ministers and the House of Commons. The chancellor of the exchequer declared in the House of Commons on the 10th of October, the earliest day on which that house assembled after the rejection of the bill by the Lords, "that unless he entertained a hope that a measure of reform equally efficient with that which had been rejected would be carried hereafter, he would not remain in office a single hour longer." Lord Ebrington brought forward the same evening a motion for a vote of confidence in ministers, which was carried by a majority of a hundred and thirty-one in a house of five hundred and twenty-seven; and the house by this means pledged to support ministers and the reform bill. On the 20th, parliament was prorogued by the king in person.

Owing to the firmness of the king, his ministers, and the House of Commons, the decision of the Lords was received by the people with deep-felt disgust; but, except in two or three isolated cases, without any alarming bursts of violence. At Derby the rabble broke open the town jail, and demolished the property of some anti-reformers, and were only prevented from the perpetration of further violence by the interference of the military. The castle at Nottingham, the property of the Duke of Newcastle, was burned by a band of rioters. Some rioting, but not of a very serious character, took place in Somersetshire and Devonshire. And at Bristol, the arrival of Sir Charles Wetherell, a strenuous anti-reformer, to discharge his judicial duties, excited a popular ferment, which, being met on the part of the magistrates at first with precipitate violence, and afterwards by cowardly supineness, hurried the populace on to works of extensive destruction. In every other part of the kingdom, however, large meetings were held, and perfect obedience to the law enforced.

Parliament re-assembled on the 6th of December 1831. In the speech from the throne, a speedy and satisfactory settlement of the question of reform was urgently recommended. The ministry adhered to their original purpose of remodelling the representation by three separate bills applicable to the varying social relations of the three incorporated nations. That which had for its object the reform of the English representation was introduced on the 12th of December. It was confessedly superior to the former in precision of expression; and some of the subordinate arrangements had been modified with a view to avoid the captious quibbling of the preceding session. The opposition modestly claimed all the improvements as their own, and yet attacked the measure as inveterately as ever. The ministerial members adopted the prudent resolution of leaving all the speaking to their opponents; but, nevertheless, the pertinacious volubility of these orators was so far successful in retarding the bill, that it did not pass through the House of Commons before the 22d of March.

It was carried up to the Lords with even more gloomy anticipations than on the former occasion. No new peers had been created. Lords Harrowby and Wharnccliffe, who had seemed at one time inclined to come to terms, resumed a hostile attitude. Between the first and second reading of the bill, however, these noblemen and their followers determined to make a concession to public feeling, and allow the bill to go into committee. In consequence of their wavering, the second reading of the bill was carried by a majority of nine, and the bill ordered to be committed the first day on which the house should

Reign of
William
IV.

sit after the Easter recess. The house, immediately after coming to this resolution, adjourned for the holydays. During the interval, the whole country was kept in a ferment by meetings assembled for the purpose of expressing their satisfaction that the bill had passed the second reading, and earnestly adjuring the Lords to give it the sanction of a law. These assemblages were more frequent, and attended by greater multitudes, than had ever previously been witnessed; and at all of them it was unequivocally declared that nothing would satisfy the nation short of the full measure introduced by Earl Grey.

While the people were thus openly busy, their enemies were privately at work with equal assiduity, and not without some success. Earl Grey, unsuspecting of the mine about to be sprung under his feet, moved, on the 7th of May, in a committee of the whole house, the adoption of the clause disfranchising all burghs having a population beneath two thousand. Lord Lyndhurst moved, as an amendment, the postponement of the first and second clauses until the question of enfranchisement should have been taken into consideration. The object of this manœuvre was to leave the opposition an opportunity of conciliating the unrepresented great towns before it proceeded to mutilate the bill. A suspicion to this effect was raised by the care which some noble lords took to vindicate the fairness of their intentions before any body had called it in question; and suspicion was rendered certainty when Lord Ellenborough favoured the house with an outline of the plan of reform which he and his friends had in contemplation. Ministers were left in a minority of thirty-five. They immediately postponed the discussion, and next day recommended to the king, in prosecution of a former understanding, a creation of peers sufficient to insure the passing of the bill. His majesty refused, and ministers immediately resigned.

Lord Althorp no sooner announced the ministerial resignation in the House of Commons, than Lord Ebrington gave notice of a motion to address the king on the state of affairs next evening. The address which, in pursuance of this notice, his lordship moved, expressed the most entire confidence in the late ministry, warned the king of the unabated ardour of the nation in favour of reform, and prayed that no men might be called to his majesty's councils who were not prepared to carry into effect the reform bill, unimpaired in all its essential provisions. The debate which ensued was eminently characterized by boldness and determination on the part of the reformers. The address was agreed to by a majority of eighty, in a house of four hundred and ninety-six. The House of Commons was supported by the nation. Wherever the news arrived of the resignation of Earl Grey, and it was circulated with unexampled rapidity, the inhabitants rose in

mass, and feeling confidence in their representatives, petitioned them to stop the supplies; while it was announced in many places, that in the event of the House of Commons refusing to do its duty, no more taxes would be paid until the reform bill passed into a law. Not one act of rioting was perpetrated from one end of the kingdom to the other, but the orderly conduct of the assembled multitudes only made their anger the more terrible.

The Duke of Wellington undertook to form an administration which should take office upon condition of carrying through a large measure of reform. At the first hint of this project, the national indignation blazed up more fiercely; the more timid politicians shrunk from the side of their leader; the duke abandoned the task as hopeless; and the king was obliged to recal Lord Grey.

On the evening of Friday the 18th May, Lord Althorp announced to the House of Commons that ministers had again accepted office, after receiving assurance that every power would be placed in their hands which should be found necessary to secure the passing of the reform bill unimpaired. The discussions of the measure in the House of Lords, subsequent to this communication, were mere matters of form. Few of the amendments proposed were ever pushed to a division. Even the most obnoxious clause of all, that which gave members to the metropolitan districts, was carried by a majority of fifty-five, in a house of a hundred and twenty-seven. A creation of peers was not resorted to for the purpose of carrying the bill. In order to render that supposed evil unnecessary, a sufficient number of noble lords absented themselves from the house to leave ministers in a majority on the third reading. The few who remained, however, expressed in their speeches the concentrated anger of all the absentees. The royal assent was given to the English bill by commission on the 7th of June 1832.

The bills for Scotland and Ireland had been merely read a first time, and then allowed to lie over until the keystone of the arch, the English bill, had been secured. As soon as that object was attained, the discussions upon the other two were resumed. Those regarding the Scotch bill were little more than a mere matter of form, no serious opposition being offered. It received the royal assent by commission on the 17th of July. Greater difficulty threatened to arise on the question of the Irish bill, for a strong body of the Irish members were dissatisfied with the provisions for the extension of the franchise, regarding them as insufficient. A timely concession on the part of ministers conciliated the malcontents; and the bill passed the Commons on Friday the 20th of July. As no essential alterations are likely to be made by the Lords, England's new constitution of parliament may be regarded as established.

Britain, New || broach.
BRITAIN, New, a large country of North America, called also *Terra Labrador*, has Hudson's Bay and Strait on the north and west, Canada and the river St Lawrence on the south, and the Atlantic Ocean on the east. It is subject to Great Britain, but yields only skins and furs. See HUDSON'S BAY.

BRITAIN, New, in the Pacific Ocean. See AUSTRAL-ASIA.

BRITANNICUS, son of the emperor Claudius by Messalina, was excluded from the empire after his father had married Agrippina, who placed her son Nero on the throne, and caused Britannicus to be poisoned, A. D. 55.

BRITTLINESS, that quality of bodics which subjects them to be easily broken by pressure or percussion.

BRIVE, an arrondissement of the department of the Corrèze in France, four hundred and six square miles in extent, and comprehending ten cantons and a hundred and one communes, with 93,858 inhabitants. The capital, Brive la Gaillarde, is on the left side of the Corrèze, on a beautiful plain, with a population of 5762 persons, employed chiefly in manufacturing muslins and other fine cotton goods.

BRIXEN, a city in the Austrian province of Tyrol and circle of Pusterthal, at the confluence of the rivers Eisack and Rientz. It contains a cathedral, four other churches, and a nunnery for English ladies. It is situated in long. 12. 39. 30. E. and lat. 46. 40. N.

BRIXHAM, a town of the hundred of Haytor, in the county of Devon, a hundred and ninety-nine miles from London, on the western side of Torbay. It is in a warm, sheltered situation, and during the war formed the place for watering the king's ships on that station. It is celebrated as the spot where King William landed in 1688. It has now a considerable fishery, and has become a place of resort for sea-bathing. The inhabitants amounted in 1801 to 3671, in 1811 to 4341, and in 1821 to 4503.

BROACH, a town and district of Hindustan, in the province of Gujerat. The district is situated principally between the 21st and 22d degrees of north latitude, and it is bounded on the west by the Gulf of Cambay. It is one of the best cultivated and most populous tracts on the west coast of India, and was finally acquired by the Bombay presidency by the treaty concluded with Scindia in 1803. This district, prior to its occupation by the British, was greatly exposed to robberies; but since its final cession in 1803 it has enjoyed almost uninterrupted prosperity. Its chief annoyance has proceeded from the adjacent countries, out of which such gangs of armed Bheels have issued as entirely to set at defiance the ordinary force of the police. The inhabitants of the district itself have been quiet, orderly, and industrious, and the land is remarkably high priced.

BROACH, the capital, is situated on an eminence on the north bank of the Nerbuddah, twenty-five miles from the entrance of the river. The houses are generally lofty, and the streets narrow and dirty. In the town and vicinity are many dilapidated mosques and mausoleums. The town has a considerable trade, and annually exports large quantities of raw and manufactured cotton to Bombay. Besides cotton, the principal exports are wheat, joaree, rice, and other grains; nuts, oil seeds, and dyeing shrubs and plants. The water of the Nerbuddah is said to possess a peculiar property in bleaching clothes to a pure white; yet the muslins are inferior to those of Bengal, and the coloured chintzes to those on the Coromandel coast. In 1772 this city was besieged by a British force under General Wedderburne, brother to Lord Loughborough, who was killed under its walls. It was stormed a few days afterwards. In 1782 it was ceded, along with the district, to Scindia; but was again taken possession of in 1803 by VOL. V.

an army under Colonel Woodington, and has ever since remained in possession of the British. Broach is thought to have been the Barygaza of the ancients; and when it surrendered to the emperor Acbar in 1572 it still continued to be a place of great trade. In 1780 it was about two miles and a half in circumference, and fortified in the oriental manner, with high walls, perforated for musketry, and flanked with towers; forming, with its natural advantages, an Asiatic fortress of considerable strength. The travelling distance from Bombay is two hundred and twenty-one miles, from Oojein two hundred and sixty-six, and from Poona two hundred and eighty-seven miles. Long. 73. 14. E. Lat. 21. 46. N.

BROACH, or *Brooch*, *Brocha*, from the French *broche*, denotes an awl or bodkin; also a large packing needle. A spit, in some parts of England, is called a *broach*; and from this word comes to pierce or broach a barrel. In Scotland, *broach*, *broche*, *brooch*, or *broche*, is the name of an utensil which the Highlanders used, like the *fibula* of the Romans, to fasten their vest or plaid. It is usually made of silver, of a round figure, with a tongue crossing its diameter, to fasten the folds of the garment; sometimes with two tongues, one on each side of a cross bar in the middle. There are preserved in several families ancient brooches of very elegant workmanship, and richly ornamented. Some of these are inscribed with names, to which particular virtues used to be attributed; others are furnished with receptacles for relics supposed to preserve the wearer from harm: so that these brooches seem to have been worn not only for use, but as amulets. One or two of this sort are figured and described by Mr Pennant, *Tour in Scotland*, i. 90, iii. 14, 3d. edit.

BROAD PIECE, a denomination given to certain gold pieces broader than a guinea; particularly Caroluses and Jacobuses.

BROADSIDE, in the sea-language, a discharge of all the guns on one side of a ship at the same time.

BROCADE, or *Brocado*, a stuff of gold, silver, or silk, raised and enriched with flowers, foliages, and other ornaments, according to the fancy of the merchants or manufacturers. Formerly the word signified only a stuff woven all of gold, both in the warp and in the woof, or all of silver, or of both mixed together; thence it passed to those stuffs in which there was silk mixed, to raise and terminate the gold or silver flowers; but at present all stuffs, even those of silk alone, whether they be grograms of Tours or of Naples, satins, and even taffeties or lustrings, if they be but adorned and worked with some flowers or other figures, are called *brocades*.

BROCATEL, or *Brocadel*, a kind of coarse brocade, chiefly used for tapestry.

BROCCOLI, a kind of cabbage cultivated for the use of the table. See HORTICULTURE.

BROCHE or *Brooch*. See BROACH.

BROCK, among sportsmen, a term used to denote a badger. A hart, too, of the third year is called a *brock* or *brocket*; and a hind of the same year is called a *brock's sister*.

BROCKLESBY, RICHARD, a physician of considerable reputation, was born in Somersetshire on the 11th of August 1722, and was descended from a respectable and opulent Irish family belonging to the sect of Quakers. He received his grammatical education at the academy of Ballytore, in the north of Ireland, and afterwards pursued his medical studies at Edinburgh and at Leyden; at which latter university he graduated in 1745, choosing for the subject of his thesis, *De Saliva sana et morbosa*. In the following year he fixed his residence in London, with a view to practice; and in 1751 was admitted a licentiate of the Royal College of Physicians, of which he

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afterwards became a fellow, having previously received honorary degrees of doctor in medicine from the universities of Dublin and of Cambridge. The first publication by which he became known to the world was his *Essay on the Mortality of the Horned Cattle*, which appeared in 1746, and gained him considerable reputation; and his practice extended itself with that gradual and steady progress which affords the surest prospect of permanent and distinguished success. His benevolent attention to his poorer patients, and the general suavity of his manners, soon brought him into notice, and procured him the esteem of a wide circle of friends, especially among his professional brethren. In consequence of their recommendation of him to Lord Barrington, he was appointed, in 1758, physician to the army; in which capacity he served in Germany during the greater part of the seven years' war, and in the course of it was chosen physician to the hospitals for British forces. The results of his observations during this period were published in 1764, under the title of *Economical and Medical Observations, from 1738 to 1763, tending to the improvement of Medical Hospitals*, in one volume octavo. He had already, however, given to the public many proofs of the activity of his mind and the variety of his attainments. The *Transactions of the Royal Society* for 1747 (vol. xlv.) contain a letter of his on the Indian Poison sent over by Don Antonio de Ulloa; and the succeeding volume for 1747-8 contains a paper on the Poisonous Root lately found mixed with the Gentian. In the *Transactions* for 1755 (vol. xlix.) are inserted his Experiments on the Sensibility and Irritability of the several parts of Animals. He also published, in different volumes of the *Medical Observations*, the following papers, namely, the case of a lady labouring under diabetes, in vol. iii.; experiments relative to the analysis of Seltzer water, and case of an encysted tumour in the orbit of the eye, in vol. iv. His *Dissertation on the Music of the Ancients* appeared in 1749, and his *Oratio Harveiana* in 1760.

Dr Brocklesby was appointed, by his patron and friend the Duke of Richmond, physician-general to the royal regiment of artillery and corps of engineers; an appointment that connected him much with the laboratory of Woolwich, which he always visited with pleasure. It was by his advice, indeed, that a professorship of chemistry was added to the establishment of the college; and it was also by his recommendation that the celebrated Dr Adair Crawford was nominated the first professor in this new chair.

The life of a medical practitioner, absorbed in the laborious duties of his profession, is seldom diversified with much incident; and Dr Brocklesby was now arrived at that period when the approaching infirmities of age demanded some relaxation from labour, and an exchange of the anxieties and fatigues of practice for the tranquil amusements of literature and the solace of cheerful society. The frugal use which he had made of means originally slender, but progressively augmenting by the increase of his professional emoluments, by the addition of a pension from the Duke of Richmond, his half pay from the army, and an estate which devolved to him on the death of his father, had placed him in circumstances not only independent, but affluent, and enabled him to derive from retirement all the advantages he had contemplated. His society was courted on all sides; and the circle of his friends comprehended some of the most distinguished literary men of the age. He was during the whole of his life intimate with Burke. His acquaintance with this extraordinary man began at the school where they were both educated, and soon ripened into the warmest and most durable friendship. He was also on terms of close intimacy with Dr Johnson, and attended him in his last

illness with the assiduity and kindness of a friend. Dr Brocklesby is characterised in Boswell's *Life of Dr Johnson* as a man whose reading, knowledge of life, and good spirits, supplied him with a never-failing source of conversation; and several letters, addressed to him from Dr Johnson, are preserved in that entertaining work. One trait, however, is omitted, which does him great honour. Understanding that Dr Johnson wished, in the latter part of his life, to remove to the Continent for the recovery of his health, Dr Brocklesby immediately made him offer of an annuity of L.100 during the remainder of his life; and, when this offer was declined, pressed him to reside in his house, as more suited to his health than the one in which he then lived. The same generous disposition was manifested in his conduct to Burke, to whom he transmitted L.1000, as a legacy he had intended leaving him, but which he thought would be of more use to him at the present time. Dr Brocklesby was, indeed, the survivor of Burke, though only for a few months; for on his return from a visit which he paid to the widow of his friend at Beaconsfield, after dining with his two nephews, Dr Thomas Young and Mr Beeby, of whose education he had taken the principal charge, he expired suddenly a few minutes after retiring to bed, without the least pain or previous illness. He left his fortune, which was considerable, between his two nephews, with the exception of a few legacies to friends and distant relations. (v.)

BROD, a town of Hungary, on the military frontier belonging to the military colony of the regiment of Brod, and giving its name to a district containing 62,000 inhabitants, mostly soldiers and their families. It is situated on the river Save; is fortified, and has a castle, a Catholic and two Greek churches, and 4100 inhabitants. Long. 17. 56. 20. E. Lat. 45. 10. 50. N.

BRODEAU, JOHN, in Latin *Brodeus*, a critic, on whom Lipsius, Scaliger, Grotius, and all the learned, have bestowed great encomiums, was descended from a noble family in France, and born at Tours in 1500. He was liberally educated, and placed under Alciat to study the civil law; but soon forsaking that pursuit, he gave himself up wholly to languages and the belles lettres. He travelled into Italy, where he became acquainted with Sadolet, Bembo, and other famous wits; and here he applied himself to the study of mathematics, philosophy, and the sacred languages, in which he made no small proficiency. Then, returning to his own country, he led a retired but not an idle life, as his many learned lucubrations abundantly testify. He was a man free from all ambition and vain-glory, and suffered his works to be published rather under the sanction and authority of others than under his own. His chief works are, 1. *Commentaries on the Anthologia*, Basel, 1549; 2. Several books of miscellanies; 3. *Notes on Martial, Euripides, &c.* Basel, 1558, Paris, 1561. He died in 1563, aged sixty-three.

BRODERA, or BARODAH, a large and wealthy town of Hindustan, in the province of Gujerat, district of Champaneer, the capital of a Mahratta chief known by the family name of the Guicowar, who is an ally of the British, and divides with them the largest and finest portion of Gujerat, his particular share being a track of about twelve thousand square miles in extent, and lying chiefly in the northern districts. The town is intersected by two spacious streets, which divide it into four equal parts, and cross at the market-place. The ruins of some handsome Mogul buildings are still to be seen; but those raised by the Mahrattas are mean and contemptible. Near the city is a stone bridge over the river Viswamitra, the only one in Gujerat, where the streams are generally crossed in ferry boats or on light floating platforms. In the environs are several magnificent wells, with steps

down to the bottom. In 1780 the fortifications of this place consisted of slight walls, with towers at irregular distances, and several double gates. It is still wealthy and populous, and during the war with Scindia and Holkar in 1803 the native bankers advanced to the British armies a crore and a half of rupees, equal to about L.1,600,000 sterling. Provisions of all descriptions are cheap and abundant, and the population amounted in 1818 to 100,000. The founder of the present family of the Guicowar invaded the province of Gujerat in 1726, and in 1730 was confirmed in his conquest by Sahoo Rajah, the grandson of Sevajee, and the reigning sovereign of the Mahrattas. He was succeeded by his son Damajee, who in 1761 was present at the battle of Paniput, and was afterwards taken prisoner by the Peshwa Bajerow, to whom he was obliged to cede half of his territories, and to acknowledge his dependence for the other half. His successor was Futteh Singh, who, dying in 1789, was succeeded by his brother Manajee, who died in 1792, when another brother, named Govind Row, ascended the throne. He died in 1800, and was succeeded by his son Annund Row Guicowar, who in his turn was succeeded in 1814 by Futteh Singh Guicowar. The revenues of this petty sovereign were in great confusion when the British interfered and undertook the management of his affairs. Long. 73. 24. E. Lat. 22. 13. N.

BRODY, a large city of the circle of Lemberg, in the Austrian province of Galicia. It stands on the river Sucha-Wielkabacha, close to the Russian frontier, by which position it is enabled to carry on a most extensive contraband trade with that extensive empire. It is an ill-built and filthy place, containing about 18,000 inhabitants, one third of whom are Jews. There are four churches for the Greeks, one for the Catholics, and some synagogues for the Jews.

BROKE, SIR ROBERT, lord chief justice of the common pleas, was the son of Thomas Broke, Esq. of Claverly in Shropshire, and educated at Oxford, from which he removed to the Middle Temple, and soon became a very eminent lawyer. In the year 1542 he was chosen summer reader, and in 1550 double reader. In 1552 he was made serjeant at law; and in the year following, the first of Queen Mary, lord chief justice of the common pleas; about which time he received the honour of knighthood. Stow says he was recorder of London and speaker of the House of Commons; which is confirmed by a manuscript in the Ashmolean library. He died and was buried at Claverly in Shropshire, the place of his nativity, in 1558. Wood gives him the character, of a great lawyer and an upright judge. His works are, 1. An abridgment containing an abstract of the year-books till the time of Queen Mary; 2. Certain cases adjudged in the reign of Henry VIII. Edward VI. and Queen Mary; 3. Reading on the statute of limitations, 32 Hen. VIII. c. 2.

BROKER. The origin of this word is contested, some deriving it from the French *broier*, "to grind;" others from *brocarder*, "to cavil, or higgie;" and others again from a trader broken, and that from the Saxon *broc*, "misfortune."

A broker is an agent or intermediate person appointed for transacting special business on account of another, but somewhat different from an ordinary factor in functions and responsibility. Of this class there are various descriptions, exercising employments without the smallest analogy, though all are brought under the general name of brokers; and of these the principal are, exchange-brokers, whose province is to ascertain the rates and relation of exchange between countries; stock-brokers, who negotiate transactions in the public-funds; insurance-brokers, who effect insurances on lives or property; and pawn-brokers, who advance money on goods, on the condition of being

allowed to sell the goods, if the sum advanced is not repaid with interest, within a limited time.

BROMBERG, one of the governments into which the Prussian province of Posen is divided. It is bounded on the north by West Prussia, on the east by the present kingdom of Poland, on the south by the government of Posen, and on the west by the province of Brandenburg. Its extent is four thousand five hundred and six square miles, or two millions eight hundred and eighty-three thousand eight hundred and forty acres. It comprehends fifty-five cities and towns, and one thousand two hundred and fifty villages, thirty-two thousand eight hundred and twenty dwelling houses, with 279,360 inhabitants, of whom about 160,000 are Catholics, and the remainder Protestants of various sects, with 16,000 Jews. It is divided into nine circles, and is a part of the former kingdom of Poland. The soil is generally a light sand. The face of the country is level, and a great portion of it is covered with woods. The agricultural product is very small, scarcely sufficient for the subsistence of the inhabitants. The whole stock of cattle for this extensive district and its numerous population was in 1820 only 33,700 horses, 11,917 cows, and 45,475 sheep of all descriptions. The city of the same name, the capital of the government and of the circle of Bromberg, called by the Poles Bydgoscy, stands on an elevation near the navigable river Brahe. It is, for a Polish town, well built, and contains one Lutheran and two Catholic churches, a monastery, a nunnery, three hospitals, and five hundred and fifty-two dwellings, with 7554 inhabitants. It has some refineries for sugar, and a little trade in corn by means of its connection with the Vistula. Long. 17. 55. E. Lat. 55. 27. N.

BROME, ALEXANDER, a poet, and attorney in the lord mayor's court in the reign of Charles II., was the author of the greater part of those songs and epigrams which were published in favour of the royalists, and against the Rump, as well in Oliver Cromwell's time as during the rebellion. These, together with his epistles and epigrams translated from different authors, were all printed in one volume octavo after the restoration. He also published a version of Horace, by himself and others, which is very far from being a bad one. He left behind him a comedy entitled *The Cunning Lovers*; and the world is indebted to him for two volumes of Richard Brome's plays in octavo, many of which, but for his care in preserving and publishing them, would in all probability have been entirely lost. He died in 1666.

BROME, Richard, a dramatic writer who lived in the reign of King Charles I. and was contemporary with Dekker, Ford, Shirley, and others. His extraction was mean, he having been originally no better than a menial servant to the celebrated Ben Jonson. He wrote himself, however, into high reputation, as is testified, not only by various commendatory verses written by his contemporaries and prefixed to many of his plays, but also by some lines which his quondam master addressed to him on account of his comedy called *The Northern Lass*. Brome, in imitation of his master, laid it down as his first great point to apply closely to the study of men and manners. His genius was entirely turned to comedy, and therefore his proper province was observation more than reading. His plots are all his own, and are far from being ill conducted; and his characters, which for the most part are strongly marked, were the offspring of his own judgment and experience, and his close attention to the foibles of the human heart. The comedies which the author left behind him are fifteen in number, ten of which are collected together in two volumes octavo.

BROMELIA, the PINE-APPLE. See HORTICULTURE.
BROMLEY, a town in the hundred of Ossulton, and

Bromberg
Bromley.

Bromley county of Middlesex, two miles from London, on the high road to the eastern counties. The inhabitants amounted in 1801 to 2101, in 1811 to 2190, and in 1821 to 2349.

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Bronzing.

BROMLEY, a market-town in the hundred of the same name in the county of Kent, ten miles from London, on the Ravensbourne. Near it is a palace belonging to the Bishop of Rochester; and in it is an hospital for the widows of clergymen, who have, besides their dwelling, a pension of L.60 per annum. The market is on Thursday. The inhabitants amounted in 1801 to 2700, in 1811 to 3011, and in 1821 to 3147.

BROMSGROVE, a market-town in the hundred of Halfshire, and county of Worcester, a hundred and seven-teen miles from London. It is a borough, and formerly sent members to parliament. It stands on the edge of a black heath, but chiefly depends on some manufactures of nails, needles, and hats. The market is on Tuesday. The inhabitants amounted in 1801 to 5898, in 1811 to 6201, and in 1821 to 7519.

BROMYARD, a market-town in the hundred of Brox-ash, and county of Hereford, a hundred and twenty-five miles from London, on the river Frome. It is a poor place, but situated in the finest part of the cider orchards. The market is on Tuesday. The inhabitants amounted in 1801 to 983, in 1811 to 1101, and in 1821 to 1227.

BRONNIZY, a circle in the Russian government of Moscow, extending over one thousand four hundred and seventy-eight square miles. It contains two cities, and five hundred and twenty-five villages, with 176,500 inhabitants. The chief place, of the same name, is situated on the Mosqua, near the lake of Beloc, and has a population of about 2000 persons. Long. 27. 55. E. Lat. 55. 20. N.

BRONTE, a city in the intendency of Catania, in Sicily. It stands in a healthy situation on the river Giarretta, near a celebrated water-fall. It is an industrious place, where linen and woollen cloths, and some kinds of paper, are made. Good wine is produced in the neighbourhood. It gave the title of duke to the late Lord Nelson. The population amounts to 9400 persons.

BRONTIUM, in *Grecian Antiquity*, a place underneath the floor of the theatres, in which were kept brazen vessels full of stones and other materials, with which they imitated the noise of thunder.

BRONTOLOGY denotes the doctrine of thunder, or an explanation of its causes, phenomena, &c. together with the presages drawn from it.

BRONZING. A combination of metals which has received the name of bronze was employed by the ancients in the fabrication of different utensils, and in casting busts, statues, and other subjects, either larger or smaller than life. The Egyptians, Greeks, and Romans, nations which subsisted long and were familiar with the most refined state of the arts, used this compound metal in the greater part of the decorations of those magnificent temples and palaces whose ruins only have remained to later eras. But amidst the general wreck there are still some fragments preserved, which indicate the perfection which had been attained in the employment of bronze. The wealth of some ancient cities was estimated by the number of their brazen statues; and Delphos, Athens, and Rhodes, are reported to have each possessed three thousand. Some distinguished Romans adorned the public edifices of their city in this manner; and so strong a propensity was excited for multiplying works of this kind, that an observation became current, that in Rome the people of brass were not less numerous than the Roman people. It has been remarked, that the works which we now execute in iron or steel were little known to the ancients; that their arms and armour were usually of brass, or the compound now alluded to;

and that a set of surgeon's instruments consisting entirely of bronze was discovered at Pompeii.

Bronze is extremely hard, sonorous, more brittle than brass, and more fusible than copper, from which, and its not being liable to tarnish, it is peculiarly adapted for casts of statues. Various nations have compounded the metals employed in different proportions. The Egyptians are said to have taken two thirds of brass and one third of copper. According to Pliny, the bronze of the Grecians was formed in the same way, with the addition of one tenth part of lead and a twentieth of silver; which proportions were adopted by the Romans. In modern times bronze is generally composed of two thirds of copper and one third of brass, and sometimes small quantities of lead and zinc have been added. These latter render the cast more compact and brilliant; and the combination of different substances occasions the readier fusibility of the whole than when separate. The ancient bronzes, however, present a difference in appearance and composition from those executed by the moderns, and the fact is ascertained in respect to the metallic proportions, by skilful chemists on analysis. An illustration of this fact is sometimes given in the four celebrated horses of bronze, supposed to be the work of Lysippus, a Greek artist; which were brought from Venice, by command of Bonaparte, to the Thuilleries at Paris, and, on the fall of that extraordinary man, restored to their original position.

The casting of bronze statues is a nice and difficult art, requiring long experience and the judicious management of a great apparatus. An exact model must be made of the subject to be cast, and nicely coated over with wax not less than an inch thick, on which the artist works the impression meant to be taken. A mould is then formed, consisting of several hollow pieces of wood or other resisting substance, filled with a mixture of clay and sand, which is applied to the model, in order that its outline may be received. The mould being united together, is perforated by a number of channels, and the melted metal being discharged from a furnace by means of these into the interior, thus produces the cast. When cold, the external covering is taken off, and the subjects appear as if covered with spines, which are the channels filled with metal: these are removed by saws, files, and chisels; and any imperfections on the surface being corrected, the whole is completed. But this in detail is a tedious, laborious, and expensive process; and the difficulty of producing beautiful works in bronze conspires to give them a high value in the estimation of the lovers of the arts. In general, the natural colour of the composition remains unaltered, and with the lapse of time tends to black, or particular shades of green; but some artists render it black artificially, or give it a green colour from the first. It is the delicacy of the workmanship, however, that constitutes the value of bronzes, not the colour, because it is the former alone which constitutes the difficulty, and calls for the skill of the artist. Colossal figures are sometimes obtained in bronze; but more usually, when of very large dimensions, they are formed by the union of several pieces, and are hollow within; as is also the case with some of those of smaller size. Considerable premiums have been offered by the *Society for the Encouragement of Arts*, for promoting the execution of bronze figures in England, but few have been claimed. Nevertheless, British artists have produced several very creditable works, if we take the low condition of sculpture in view; but, either from want of skill or practice, neither the bronzes of this island nor those of the Continent can rival the masterpieces of antiquity. Perhaps it is only the best specimens which are preserved, and many of inferior note have been allowed to decay, or cease to attract attention; and in this way we may partly account for our own inferiority.

Bronzing. The substances on which bronzing is employed are either metals, wood, ivory, clay, or plaster; but more general preference is given to wood or plaster. The colours are of various shades and intensity; their composition and application being in a great measure arbitrary, according to the will of the artist. This art is nothing but a species of painting, far from the most delicate kind; and, when applied to plaster figures, may be done either with or without cement, the latter rendering it more durable. One principal ingredient in bronzing is gold-powder, for the preparation of which the following receipt is given. A quantity of leaf-gold is ground with virgin honey on a stone, until the texture of the leaves be completely broken, and their parts divided to the most minute degree. The mixture of gold and honey is then removed from the stone and put into a basin of water, whereby the honey may be melted, and the gold freed from it; and the basin is allowed to stand at rest until the gold subsides. When it does so, the water is poured off, and fresh quantities are added, until the honey be entirely washed away; after which the gold is put in paper, and dried for use. This is the true gold powder; besides which, there is another, called German gold, in common use; and also a third, called *aurum mosaicum*, or *musicum*, greatly employed in bronzing, and which is thus prepared. A pound of tin, seven ounces of flour of sulphur, half a pound of purified quicksilver, and the same quantity of sal ammoniac, are taken as the necessary ingredients. The tin being melted in a crucible, the quicksilver is added to it; and, when this mixture is cold, it is reduced to powder, and ground with the sal ammoniac and sulphur, until the whole be thoroughly mixed. They are then to be calcined in a matrass, and the sublimation of the other ingredients will leave the tin converted into the *aurum mosaicum*, which is found at the bottom of the glass like a mass of bright flaky gold powder. Should any black or discoloured particles appear, they must be removed. The sal ammoniac used here must be very white and clean, and the mercury quite pure, and unadulterated with lead. These colours are commonly employed in bronzing; but when a shade more of a red, resembling copper, is required, it can easily be obtained by grinding a very small quantity of red lead along with them. Copper powder may be procured by dissolving filings or slips of that metal with nitrous acid in a receiver. When the acid is saturated the slips are to be removed; or, if filings be employed, the solution is to be poured off from what remains undissolved. Small iron bars are then put in, which will precipitate the copper from the saturated acid, in a powder of the peculiar appearance and colour of copper; and the liquid being poured from the powder, this is to be washed clean off the crystals by repeated levigations. In addition to these compounds, we may name gold size, which is of particular use in bronzing and several other branches of the arts. This is prepared from a pound of linseed oil, with four ounces of gum animi. The latter is gradually supplied in powder to the oil, while boiling; and it is necessary that it should be stirred with every successive dose, until the whole be dissolved and incorporated with the oil. The mixture is still allowed to continue boiling, until a small quantity, when taken out, appears of a thicker consistence than tar, and the whole being then strained through a coarse cloth, is put aside. When used, it must be ground with as much vermilion as will render it opaque, and, at the same time, diluted with such a quantity of oil of turpentine as will bring it to a proper consistence for working freely with the pencil.

In regard to the operation of bronzing itself, if a cement is to be used, the powders now described may be mixed with strong gum water or isinglass, and laid on the subject with a brush or pencil; in doing which, some artists

recommend beginning at the bottom and proceeding upwards. By a different process, gold size, prepared with a due proportion of turpentine, may be taken, and the subject covered with it; then being allowed to dry very nearly, but still preserving a certain clamminess, a piece of soft leather wrapped round the finger is dipped in the powder, and rubbed over the work; or, what is judged preferable, it may be spread with a soft camel-hair pencil. The whole, now covered, must be left to dry, and the loose powder then cleared away by a hair pencil also. Here the principal nicety consists in ascertaining the proper period of dryness for applying the powder, as much of the effect depends on it. But this method of bronzing is esteemed better, because the gold size binds the powders to the ground, without any hazard of their scaling or rubbing off, which sometimes happens when gum or isinglass is employed. The precise tint of bronzing is regulated by taste; and, indeed, a very perceptible difference appears both in ancient and modern statues, resulting either from age or the metallic proportions.

Bronzing on wood may be effected by a particular process, somewhat varying from the general rules. Prussian blue, patent yellow, raw umber, lamp-black, and pipe-clay, are ground separately with water, on a stone, and as much of them as will make a good colour put into a small vessel three fourths full of size, not quite so strong as what is called clean size in gilding. This mixture is found to succeed best on using about half as much more pipe-clay as of the rest; but this depends on taste and fancy in preferring a peculiar tint. The wood being previously cleaned and smoothed, and coated with a mixture of clean size and lamp-black, receives a new coating with the preceding ingredients, twice successively, having allowed the first to dry: afterwards the bronze-powder is to be laid on with a pencil, and the whole burnished or cleaned anew, observing to repair the parts which may be injured by this operation. Next, the work must be coated over with a thin lather of Castile soap, which will take off the glare of the burnishing, and afterwards carefully rubbed with a woollen cloth. The gangrenous appearance of the cavities is effected by slightly wetting them with a camel-hair pencil dipped in the lather, and then sprinkling them with a little dust of verditer gum. The superfluous powder may be rubbed off when dry.

In bronzing iron, the subject should be heated to a greater degree than the hand can bear, and German gold, mixed with a small quantity of spirit of wine varnish, spread over it with a pencil. Should the iron be already polished, it is necessary to heat it well and moisten it with a linen rag wet in vinegar, on purpose to obscure the glare, that the bronze-powder may be sufficiently incorporated with the surface. There are other methods of accomplishing the same object, as by employing some coloured mordant, when the iron is not to be exposed to heat, and spreading the bronze over the mordant, when half dry, with a pencil. Bronze is injured by humidity; and it is said not to preserve its proper quality beyond ten years; but it may be renewed, in which case the subject must be completely cleaned.

There is an analogous method of silvering casts of plaster of Paris, and other substances, which is also called bronzing, and conducted after the manner above described; but it is not in general repute.

Conjectures have been entertained, that artists originally resorted to bronzing solely for the purpose of correcting the glare of colours; but this is exceedingly improbable; and it is certainly unnecessary to seek farther than the inducement of easily imitating metallic figures esteemed by the curious. This art has of late years come into very general use, and has received many improvements.

Bronzing.

Bronzes
||
Broom.

BRONZES, a name given by antiquaries to figures either of men or beasts, to urns, and in general to every piece of sculpture which the ancients made of that metal. We likewise give the name of *bronzes* to statues or busts cast of bronze, whether these pieces be copies of antiques or original subjects.

BROOKE, MRS., daughter of a clergyman of the name of Moore, was a lady as remarkable for her virtue and suavity of manners as for her great literary accomplishments. Her first performance, which introduced her to the notice and consequent esteem of the public, was *Julia Mandeville*; a work concerning which there were various opinions, but which every body read with eagerness. It has been often wished that she had made the catastrophe less melancholy; and we believe that she was afterwards of the same opinion, but she thought it unworthy of her character to alter it. Soon afterwards she went to Canada with her husband, who was chaplain to the garrison at Quebec; and here she saw and loved those romantic characters and scenes which gave birth to *Emily Montague*; a work most deservedly in universal esteem, which has passed through several editions, and which is now not easily met with. On her return to England, accident introduced, and congenial sentiments attracted her, to Mrs Yates; and an intimacy was formed which terminated only with the life of that lady. Mrs Brooke, in consequence of this connection, formed an acquaintance with Mr Garrick, and wrote some pieces for the stage. She had, however, great reason to be dissatisfied with his behaviour as a manager; and she made *The Excursion*, a novel which she wrote at this time, the vehicle by which she exhibited to the public her complaints. Her anger, we believe, was just, but the retribution was too severe. She herself afterwards thought so, for she lamented and retracted it. Her first dramatic performance was the tragedy of *Virginia*, 1756. Her next effort in that line was *The Siege of Synope*, a tragedy, introduced by Mr Harris, and written principally with the view of placing Mrs Yates in a conspicuous character. This did not altogether fail, but it did not become popular; it wanted energy, and it had not much originality; there was little to disapprove, but there was nothing to admire. Her next and most popular production was *Rosina*, which, in a most liberal manner, she presented to Mr Harris. Few modern pieces have been equally successful. Her last musical piece, entitled *Marian*, which was introduced by Shield, continued for some time to be occasionally exhibited. Mrs Brooke was also the translator of various books from the French. She was esteemed by Dr Johnson, valued by Miss Seward, and her company was courted by all the first characters of her time. She died in January 1789, two days after her husband. Her husband enjoyed the rectory of Colney in Norfolk, to which he had been preferred after his arrival from America.

BROOM denotes a well-known household besom or implement wherewith to sweep away dirt, dust, and the like. We say a *birch-broom*, a *hair-broom*, a *rush-broom*, a *heath-broom*. The primitive kind of brooms, from which the denomination is given to all the rest, was made of the *genista* or wild broom growing on commons.

Broom-flower gives the denomination to an order of knights instituted by St Louis of France on occasion of his marriage. The motto was *Exaltat humiles*, and the collar of the order was made up of broom flowers and husks, enamelled and intermixed with *fleurs de lis* of gold, set in open lozenges, enamelled white, chained together; and at it hung a cross florence of gold. This answers to what the French called *Ordre de la Géneste*, from the name of a species of broom so called, different from the common broom, as being lower, the stalk smaller, and leaf narrow: the flower is yellow, and bears a long husk. Some also speak

of another order of the *Géneste* or *Broom* established by Bro Charles Martel, or rather Charles VI.

BROOME, WILLIAM, the coadjutor of Pope in translating the *Odyssey*, was born in Cheshire, as is said, of very mean parents. He was educated upon the foundation at Eton, and was captain of the school a whole year, without any vacancy by which he might have obtained a scholarship at King's College. Being by this delay, which is said to have happened very rarely, superannuated, he was sent to St John's College by the contribution of his friends, where he obtained a small exhibition. At this college he lived for some time in the same chamber with the well known Ford, by whom Dr Johnson heard him described as a contracted scholar and a mere versifier, unacquainted with life, and unskilful in conversation. His addiction to metre was then such that his companions familiarly called him *Poet*. When he had opportunities of mingling with mankind, he cleared himself, as Ford likewise owned, from great part of his scholastic rust. He appeared early in the world as a translator of the *Iliads* into prose, in conjunction with Ozell and Oldisworth. How their several parts were distributed is not known. This is the translation of which Ozell boasted as superior, in Toland's opinion, to that of Pope. It has long since vanished, Dr Johnson observes, and is now in no danger from the critics. He was introduced to Mr Pope, who was then visiting Sir John Cotton at Madingley, near Cambridge, and gained so much of his esteem that he was employed to make extracts from Eustathius for the notes to the translation of the *Iliad*; and in the volumes of poetry published by Lintot, commonly called *Pope's Miscellanies*, many of his early pieces were inserted.

Pope and Broome were to be yet more closely connected. When the success of the *Iliad* gave encouragement to a version of the *Odyssey*, Pope, weary of the toil, called Fenton and Broome to his assistance; and taking only half the work upon himself, divided the other half between his partners, giving four books to Fenton and eight to Broome. Fenton's books are enumerated in Dr Johnson's life of him. To the lot of Broome fell the second, sixth, eighth, eleventh, twelfth, sixteenth, eighteenth, and twenty-third, together with the burden of writing all the notes. The price at which Pope purchased this assistance was L.300 paid to Fenton and L.500 to Broome, with as many copies as he wanted for his friends, which amounted to L.100 more. The payment made to Fenton is known only by hearsay; Broome's is very distinctly told by Pope in the notes to the *Dunciad*. It is evident that, according to Pope's own estimate, Broome was unkindly treated. If four books could merit L.300, eight, and all the notes, equivalent at least to four, had certainly a right to more than L.600. Broome probably considered himself as injured, and there was for some time more than coldness between him and his employer. He always spoke of Pope as too much a lover of money, and Pope pursued him with avowed hostility; for he not only named him disrespectfully in the *Dunciad*, but quoted him more than once in the *Bathos*, as a proficient in the art of sinking; and in his enumeration of the different kinds of poets distinguished for the profound, he reckons Broome among "the parrots who repeat another's words in such a hoarse odd tone as makes them seem their own." It has been said that they were afterwards reconciled; but their peace was probably without friendship. He afterwards published a *Miscellany of Poems*, and never rose to very high dignity in the church. He was some time rector of Sturston in Suffolk, where he married a wealthy widow; and afterwards, when the king visited Cambridge, 1728, became doctor of laws. He was in 1733 presented by the crown to the rectory of Pulham in Norfolk, which he held with Oakley Magna in Suffolk,

being given him by Lord Cornwallis, to whom he was chaplain, and who added the vicarage of Eye in Suffolk. He then resigned Pulham, and retained the other two. Towards the close of his life he grew again poetical, and amused himself with translating Odes of Anacreon, which he published in the Gentleman's Magazine, under the name of *Chester*. He died at Bath in 1745.

BROOMING, or *BREAMING of a Ship*, the washing and burning off all the filth she has contracted on her sides, with weeds, straw, broom, &c. when she is on the earreen, or on the ground.

BROOS, a town, the capital of a small district, to which it has given its name, in the Saxon division of the Hungarian province of the Seven Mountains. It contains a Greek, a Lutheran, and a Calvinistic church, five hundred and ninety houses, and 4560 inhabitants. Long. 23. 7. 26. E. Lat. 45. 40. 46. N.

BROSELEY, a market-town within the franchise of Wenlock, in the county of Salop, a hundred and forty-six miles from London, on the river Severn. It is a place of considerable trade in iron, having near it productive mines of that mineral, as well as of coal. It has a good market on Wednesday. The inhabitants amounted in 1801 to 4832, in 1811 to 4850, and in 1821 to 4814.

BROSSARD, SEBASTIAN DE, an eminent French musician. In the early part of his life he had been prebendary and chapel-master of the cathedral church of Strasbourg, but afterwards became grand chaplain and also maître de chapelle in the cathedral of Meaux. There is extant of his a work entitled *Prodromus Musicalis*, in two volumes folio. He was also author of a very useful book entitled *Dictionnaire de Musique*, printed at Amsterdam, in folio, 1703; and afterwards at the same place in octavo, without a date. At the end of this book is a catalogue of authors ancient and modern, to the amount of nine hundred, who have written on music, divided into classes; wherein are interspersed many curious observations of the author relating to the history of music. From M. Boivin's *Catalogue Général des Livres de Musique* for the year 1729, it appears that Brossard was the author of two sets of motets, as also of nine *Leçons de Ténèbres*, therein mentioned. It seems that these several publications were made at a time when the author was far advanced in years; for Walther takes notice that in the *Mercure Galante* he is mentioned as an abbé and composer as early as the year 1678. He died on the 10th August 1730, aged upwards of seventy.

BROSSES, CHARLES DE, first president of the parliament of Burgundy, was born at Dijon on the 17th of February 1707. He studied law with a view to the magistracy, but without neglecting literature and the sciences, to which he discovered an early and decided attachment. His study of the Roman history excited in him a strong desire to visit Italy, which he accordingly traversed in 1739, in company with his friend M. de Sainte-Palaye. On his return to France he published his *Lettres sur l'État Actuel de la Ville Souterraine d'Herculanum*, Dijon, 1750, 8vo; the first work which had appeared upon that interesting subject. A collection of letters, written during his Italian tour, entitled *Lettres Historiques et Critiques*, in three vols. 8vo, was published at Paris after his death without the consent of his family. In 1760 he published a dissertation *Sur le Culte des Dieux Fétiches*, 12mo, which was afterwards inserted in the *Encyclopédie Méthodique*. At the solicitation of his friend Buffon, De Brosses undertook his *Histoire des Navigations aux Terres Australes*, which was published in 1756, in two vols. 4to, with maps, by Robert de Vaugondy. It was in this work that De Brosses first laid down the geographical divisions of Australasia and Polynesia, which were afterwards adopted by Pinkerton and succeeding geographers. In 1765 appeared his *Traité*

de la Formation Mécanique des Langues; a work distinguished by much research, and containing many ingenious hypotheses; but, at the same time, marked by that love of theory which is so apt to imbue the cultivators of etymological science.

De Brosses had been occupied, during a great part of his life, in making a translation of Sallust, and in attempting to supply the chasms in that celebrated historian. At length, in 1777, he published *L'Histoire du 7e Siècle de la République Romaine*, three vols. 4to; a work which would probably have met with great success had the style corresponded with the interest of the subject, and with the author's historical sagacity and depth of research. To the history is prefixed a learned life of Sallust, which was reprinted at the commencement of the translation of that historian by De Lamalle. After the death of De Brosses a supplement was added to this work, from his MSS. containing the various readings, fragments, and an index of the authors from whom they are taken. This supplement, which should be placed at the end of the third volume, is wanting in some copies.

These literary occupations did not prevent De Brosses from discharging with ability his official duties, nor from carrying on a constant and extensive correspondence with the most distinguished literary characters of his time. During the leisure afforded him by the suspension of the parliaments in the year 1771, he applied himself with greater vigour to literature. In 1758 he succeeded the Marquis de Caumont in the *Académie de Belles Lettres*; but was never admitted a member of the French Academy, in consequence, it is said, of the opposition of Voltaire, who entertained a dislike to him.

De Brosses died on the 7th of May 1777. He was a man no less distinguished for ease and vivacity in the general intercourse of society, than for the extent and variety of his literary attainments. Besides the works we have already mentioned, he wrote several memoirs and dissertations in the collections of the Academy of Inscriptions, and in those of the Academy of Dijon. He also contributed a number of articles to the *Dictionnaire Encyclopédique*, on the subjects of grammar, etymology, music, &c.; and he left behind him several MSS. which were unfortunately lost during the revolution. (See the *Biographie Universelle*.)

BROTHER, *Frater*, a term of relation between two male children, sprung from the same father, or mother, or both. Sealiger and Vossius derive *frater* from *φραγν*, for *φραγν*, which properly signifies a person who draws water in the same well; *φραγ*, in Greek, signifying *well*, and *φραγν*, a company of people who have a right to draw water out of the same well. The word, it is said, came originally from the city Argos, where there were only a few wells distributed in certain quarters of the city, to which those of the same neighbourhood alone repaired.

By the civil law, brothers and sisters stand in the second degree of consanguinity; by the canon law they are in the first degree. By the Mosaic law the brother of a man who died without issue was obliged to marry the widow of the deceased. Deuter. xxv. 7. The ancients applied the term brother indifferently to almost all who stood related in the collateral line, as uncles and nephews, cousins germans, and the like. This we learn not only from a great many passages in the Old Testament, but also from profane authors. Cicero, in his Philippics, says, Antonia was both wife and sister of Mark Antony, because she was daughter of his brother C. Antonius. And as to cousins, Tullus Hostilius, in Dionysius Halicarnasseus, calls the Horatii and Curiatii brothers, because they were sisters' children. The language of the Jews, Bishop Pearson observes, included in the name of brethren not only the

Brothers
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strict relation of fraternity, but also the larger one of consanguinity. We are brethren, says Abraham to Lot, Gen. xiii. 8, whereas Lot was only his nephew. So Jacob told Rachel that he was her father's brother, Gen. xxix. 12, whereas he was only her father's nephew. This consideration has been urged with good advantage against the Antidicomarianites, who, from the mention made of the brethren of Jesus, John ii. 12, Matt. xii. 46, have impugned the perpetual virginity of the mother of Christ. Among us it is customary for kings to give the title of brother to each other; the unction in coronation being esteemed to create a kind of brotherhood. Nor is the custom modern. Menander mentions a letter of Cosroes king of Persia to the emperor Justinian, beginning thus: "Cosroes, king of kings, to the emperor Justinian my brother." Kings now also give the same appellation to the electors of the empire. In the civil law, brothers, *fratres*, in the plural, sometimes comprehends sisters; as *Lucius et Titia, fratres; tres fratres, Titius, Mævius, et Seia*.

Foster-BROTHERS, those who have been suckled by the same nurse. The French call them *fratres du lait*, or brothers by milk; which is most properly used in respect of a person who had been suckled by a nurse at the same time with the nurse's own child.

BROTHER was also used by the writers of the middle ages for a *comes*, or governor of a province.

BROTHER is applied, in a less proper sense, to denote a person of the same profession; in which sense judges, bishops, priests, call each other brothers.

BROTHER is also a customary term by which priests of the same persuasion address one another: but it is more particularly used to denote the relation between monks of the same convent; as Brother Zachary. In English we more usually say Friar Zachary, from the French word *frère*, brother. Preachers also call their hearers *my brethren*, or *my dear brethren*. This appellation is borrowed from the primitive Christians, who all called each other *brothers*. But it is now principally used for such of the religious as are not priests; those in orders are generally honoured with the title of *father*, whereas the rest are only simple brothers.

BROTHER is also an appellation more peculiarly given to certain orders of religious.

BROTHERS of Arms, an appellation given to those who contract a kind of fraternity in war, obliging themselves to the mutual service and assistance of each other. In the military orders the knights are also called *brothers*. In the order of Malta there is a particular class who are called *serving brothers*, consisting of such as cannot give proof of their nobility. In Latin they are denominated *fratres clientes*.

BROTHERS of the Rosy Cross. See ROSYCRUCIANS.

BROTTERODE, a market-town of the circle of Schmalkald, in Hesse-Cassel. It stands on the river Lauderbach, and contains 2860 inhabitants, employed in various minor manufactures.

BROUGH, a market-town in the east ward of the county of Westmoreland, two hundred and sixty-two miles from London. It is on a brook running into the Eden two miles below the town. Near it are the ruins of a castle belonging to the Earl of Thanet, the prospects around which are very magnificent. It has a market on Tuesday. The inhabitants amounted in 1801 to 694, in 1811 to 758, and in 1821 to 940.

BROUGHTON, THOMAS, a learned divine, and one of the original writers of the *Biographia Britannica*, was born at London, July 5, 1704, in the parish of St Andrew, Holborn, of which parish his father was minister. At an early age he was sent to Eton School, where he soon distinguished himself by the acuteness of his genius and the studi-

ousness of his disposition. Being superannuated on this foundation, he removed about 1722 to the university of Cambridge; and, for the sake of scholarship, entered himself of Caius College. Here two of the principal objects of his attention were the acquisition of knowledge of the modern languages, and the study of the mathematics, under the famous Professor Sanderson. In May 1727, Mr Broughton, after taking the degree of bachelor of arts, was admitted to deacon's orders, and in the succeeding year was ordained priest, and proceeded to the degree of M.A. At this time he removed from the university to the curacy of Offley in Hertfordshire. In 1739 he was instituted to the rectory of Stepington, otherwise Stibington, in the county of Huntingdon, on the presentation of John duke of Bedford, and was appointed one of that nobleman's chaplains. Soon afterwards he was chosen reader to the Temple, by which means he became known to Bishop Sherlock, then master of it, and who conceived so high an opinion of our author's merit, that in 1744 this eminent prelate presented Mr Broughton to the valuable vicarage of Bedminster, near Bristol, together with the chapels of St Mary Redcliff, St Thomas, and Abbot's Leigh annexed. Some short time afterwards he was collated, by the same patron, to the prebend of Bedminster and Redcliff, in the cathedral of Salisbury. Upon receiving this preferment he removed from London to Bristol, where he married the daughter of Thomas Harris, clerk of that city, by whom he had seven children, six of whom survived him. He resided on his living till his death, which happened on the 21st December 1774, in the seventy-first year of his age. He was interred in the church of St Mary Redcliff.

From the time of Mr Broughton's quitting the university till he was considerably advanced in life, he was engaged in a variety of publications, of which a list is given in the *Biographia Britannica*, second edition. Some little time before his death he composed "a short view of the principles upon which Christian churches require, of their respective clergy, subscription to established articles of religion;" but this work never appeared in print. He possessed, likewise, no inconsiderable talent for poetry, as is evident from many little fugitive pieces in manuscript, found among his papers; and particularly from two unfinished tragedies, both written at the age of seventeen. He was a great lover of music, particularly the ancient; which introduced him to the knowledge and acquaintance of Mr Handel, whom he furnished with the words for many of his compositions. In his public character Mr Broughton was distinguished by an active zeal for the Christian cause, joined with a moderation of mind. In private life he was devoted to the interests and happiness of his family; and was of a mild, cheerful, and liberal temper. In 1778 a posthumous volume of sermons, on select subjects, was published by his son, the Rev. Thomas Broughton, M.A. of Wadham College, Oxford.

BROUKHUSIUS, JANUS, or JOHN BROEKHUIZEN, a distinguished scholar in Holland, was born on the 20th November 1649, at Amsterdam, where his father was a clerk in the admiralty. He learned the Latin tongue under Hadrian Fumius, and made a prodigious progress in polite literature; but, his father dying when he was very young, he was taken from literary pursuits, and placed with an apothecary at Amsterdam, with whom he lived several years. But not liking the pestle and mortar, he went into the army, where his behaviour raised him to the rank of lieutenant-captain; and, in 1674, he was sent with his regiment to America in the fleet under Admiral de Ruyter, but returned to Holland the same year. In 1678 he was sent to the garrison at Utrecht, where he contracted a friendship with the celebrated Grævius; and here, though a person of an excellent temper, he had the mis-

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Brouncker fortune to be so deeply engaged in a duel, that, according to the laws of Holland, his life was forfeited; but Grævius wrote immediately to Nicholas Heinsius, who obtained his pardon from the stadtholder. Not long afterwards he became a captain of one of the companies then at Amsterdam; which post placed him in an easy situation, and gave him leisure to pursue his studies. His company being disbanded in 1697, a pension was granted him, upon which he retired to a country-house near Amsterdam, where he saw but little company, and spent his time among books. He died on the 15th December 1707, at the age of fifty-eight.

As a classical editor, he is distinguished by his labours upon Tibullus and Propertius: the latter was published in 1702, the former in 1708. He was an excellent Latin poet himself, and a volume of his poems was published at Utrecht, 1684, in 12mo; but a very noble edition of them was given by Van Hoogsträton, at Amsterdam, 1711, in 4to. His Dutch poems were also published at Amsterdam, 1712, in 8vo, by the same person, who prefixed his life, extracted from the funeral oration pronounced over him by Peter Burman. Broukhuisius was also an editor of Sannazarius's and Palearius's Latin works. With regard to his Latin poems, the authors of the *Journal de Trévoux* have observed that his verses are written in good enough Latin, but want fire, and that the author was a poet by art, not by nature; an observation which is applicable to the bulk of modern Latin poems.

BROUNCKER, or BROUNKER, WILLIAM, lord viscount of Castle-Lyons, in Ireland, and the first president of the Royal Society, was the son of Sir William Brouncker, knight, and born about the year 1620. He was distinguished by his knowledge of the mathematics, and by the considerable posts of honour and profit he enjoyed after the restoration; for he had at the same time the office of chancellor to the queen and the keeping of her great seal, that of one of the commissioners of the navy, and master of St Catharine's Hospital, near the Tower of London. He wrote, 1. Experiments on the recoiling of Guns; 2. An algebraical paper upon the squaring of the Hyperbola; and several letters to Dr Usher, archbishop of Armagh. He died in 1684.

BROUSSONET, PIERRE MARIE AUGUSTE, a distinguished French naturalist, born at Montpellier on the 28th February 1761. His father was a respectable schoolmaster in that town, who, perceiving the avidity with which he received instruction of every kind, took pains to store his mind with knowledge at an early age. It appears from his writings that he was at first educated for the medical profession. The opinion entertained in the university of the success with which he pursued his studies, was proved by his being appointed to fill a professor's chair when he was only eighteen years of age. So great, indeed, was the reputation he had acquired, that when he offered himself as candidate a few years afterwards for a seat in the Academy of Sciences, he was elected a member by an unanimous vote; a circumstance which had hitherto been without example since the foundation of that learned body. Botany seems to have been the science to which he was at first chiefly devoted; and he laboured with much zeal to establish the system of Linnæus in France. In pursuit of this great object, and with the view of extending his knowledge of the science, he visited Paris, and studied every museum and collection from which he could derive instruction in the different branches of natural history. He next came to England, where he was admitted in 1782 an honorary member of the Royal Society. It was also at this period that he published at London his work on fishes, describing the most rare species of this class of animals, under the title of *Ichthyologia, seu Piscium Descriptiones et Icones*. On his return to Paris he was appointed perpetual secretary to the Society of Agriculture, VOL. V.

an office which the intendant Berthier de Sauvigny purposely resigned that it might be filled by Broussonet.

A life thus dedicated to the pursuits of science was not likely to be chequered by any remarkable vicissitude. But the revolution, which soon broke out in France, and for a long time unhinged all the ordinary relations of society, had already involved in its vortex not only the ambitious and the turbulent spirits of the nation, but also the peaceful votaries of science. In 1789 he was nominated a member of the Electoral College of Paris, an office which required him to serve as magistrate whenever his colleagues were in need of assistance in the exercise of their functions. On the first day when he was called upon this duty, as he was proceeding to the Hotel de Ville, he had the misfortune to see his friend and protector Berthier barbarously murdered by the populace. His own life was frequently exposed to great danger during the tumults that ensued, and when he had the charge of superintending the supply of provisions for the capital. In 1791 he had a seat in the legislative assembly; but, disgusted with politics, he quitted Paris the year following, and repaired to his native city. Persecution followed him in his retreat, and he was glad to effect his escape to Madrid, after encountering many dangers. But though well received and liberally assisted by the literati of that city, the malignity of the French emigrants, who could not pardon his having held any office under the revolutionary government, still pursued him, and drove him from Spain, and afterwards from Lisbon, where he had sought another asylum. He at last went out as physician to an embassy which the United States sent to the emperor of Morocco. He was furnished with the means of equipping himself by the generous assistance of Sir Joseph Banks, who, informed of his distresses, nobly sent him a credit for L.1000. After residing for some time at Morocco, during which he lost no opportunity of pursuing his favourite science, he obtained from the French directory permission to return to France; and he was appointed by them consul at the Canaries, in which capacity he resided for two years at Teneriffe. On his return in 1797 he was chosen member of the institute, and was reinstated in his botanical professorship at Montpellier, with the direction of the botanical garden. He was afterwards elected a member of the legislative body, and died of apoplexy on the 27th July 1807. France is indebted to him for the introduction of the Merino sheep and Angola goats.

Besides the work on fishes, already noticed, the following are his principal productions: 1. *Variæ Positiones circa Respirationem*, Montpellier, 1788. 2. *Essai sur l'Histoire Naturelle de quelques espèces de Moines, décrite à la manière de Linné*, 8vo, 1784, which is a translation of a Latin satire on the monks, the original of which appeared in Germany in 1783. 3. *Année rurale, ou Calendrier à l'usage des Cultivateurs*, in 2 vols. 12mo. Paris 1787-8. 4. *Notes pour servir à l'Histoire de l'Ecole de Médecine de Montpellier pendant l'an VI*. 8vo, Montpellier, 1795. He was also a conductor, conjointly with Parmentier, Dubois, and Lefebure, of *La Feuille du Cultivateur*, in 8 vols. 4to, published in 1788 and the following years. (x.)

BROWN, ROBERT, a schismatic divine, the founder of the Brownists, a numerous sect of dissenters in the reign of Queen Elizabeth. He was the son of Mr Anthony Brown of Tolthorp in Rutlandshire, whose father obtained the singular privilege of wearing his cap in the king's presence, by a charter of Henry VIII. Robert was educated at Cambridge, in Corpus Christi, or, according to Collier, in Bennet College, and was afterwards a schoolmaster in Southwark. About the year 1580 he began to promulgate his principles of dissension from the established church; and the following year he preached at Norwich,

Brown. where he soon accumulated a numerous congregation. He was violent in his abuse of the church of England, and pretended to divine inspiration, alleging that he alone was the sure guide to heaven. This new sect daily increasing, Dr Freaque, bishop of Norwich, with other ecclesiastical commissioners, called our apostle before them. He was insolent to the court, and they committed him to the custody of the sheriff's officer; but he was released at the intercession of lord treasurer Burghley, to whom it seems he was related. Brown now left the kingdom, and, with permission of the states, settled at Middleburg in Zealand, where he formed a church after his own plan, and preached without molestation; but here persecution, the natural stimulus of fanaticism, was wanting. In 1585 we find him again in England; for in that year he was cited to appear before Archbishop Whitgift, and, seeming to comply with the established church, was, by Lord Burghley, sent home to his father; but relapsing into his former obstinacy, his aged parent was obliged to turn him out of his house. He now wandered about for some time, and in the course of his mission endured great hardships. At last he fixed at Northampton, where, labouring with too much indiscretion to increase his sect, he was cited by the Bishop of Peterborough, and, refusing to appear, was finally excommunicated for contempt. The solemnity of this censure, we are told, immediately effected his reformation. He moved for absolution, which he obtained, and from that time became a dutiful member of the church of England. This happened about the year 1590; and, in a short time afterwards, Brown was preferred to a rectory in Northamptonshire, where he kept a curate to do his duty, and where he might probably have died in peace; but having some dispute with the constable of his parish, he proceeded to blows; and was afterwards so insolent to the justice, that he committed him to Northampton jail, where he died in 1630, aged eighty. Thus ended the life of the famous Robert Brown, the greatest part of which was a series of opposition and persecution. He boasted on his death-bed that he had been confined in no less than thirty-two different prisons. He wrote *A Treatise of Reformation without tarrying for any, and of the wickedness of those teachers which will not reform themselves and their charge, because they will tarry till the magistrate command and compel them, by me Robert Brown; and two other pieces; making together a thin quarto, published at Middleburg, 1582.*

BROWN, Ulysses Maximilian, a celebrated general of the eighteenth century, was son of Ulysses, Baron Brown and Camus, colonel of a regiment of cuirassiers in the emperor's service, and descended from one of the most ancient and noble families in Ireland. He was born at Basel in 1705; and having finished his first studies at Limerick in Ireland, was in 1715 sent for into Hungary by Count George Brown, his uncle, member of the aulic council of war, and colonel of a regiment of infantry. He was present at the famous battle of Belgrade in 1717. Next year he followed his uncle into Italy, who made him continue his studies in the Clementine College at Rome till the year 1721, when he was sent to Prague in order to learn the civil law. At the end of the year 1723 he became captain in his uncle's regiment, and in 1725 lieutenant-colonel. In 1730 he went into Corsica with a battalion of his regiment, and contributed greatly to the taking of Callansara, where he received a considerable wound in his thigh. In 1732 the emperor made him chamberlain. He was raised to the rank of colonel in 1734, and distinguished himself so much in the war of Italy, especially at the battles of Parma and Guastalla, and in burning in the presence of the French army the bridge which the Marshal de Noailles had caused to be thrown over the Adige,

that he was made general in 1736. The following year, by an excellent manœuvre, he favoured the retreat of the army, after the unhappy battle of Banjuluca in Bosnia, and saved all the baggage. His admirable conduct upon this occasion was rewarded by his obtaining a second regiment of infantry, vacant by the death of Count Francis de Wallis.

On his return to Vienna in 1739 the emperor Charles VI. raised him to the rank of field-marshal-lieutenant, and made him counsellor in the aulic council of war. After the death of that prince, the king of Prussia entering Silesia, Count Brown with a small body of troops disputed the country with him inch by inch. He signalized himself on several occasions; and in 1743 the queen of Hungary made him a privy-counsellor at her coronation in Bohemia. He at length passed into Bavaria, where he commanded the van-guard of the Austrian army; seized Deckendorf, with a great quantity of baggage; and obliged the French to abandon the banks of the Danube, which the Austrian army passed in full security. The same year, that is, in 1743, the queen of Hungary sent him to Worms in quality of her plenipotentiary to the king of Britain, where he put the last hand to the treaty of alliance between the courts of Vienna, London, and Turin. In 1744 he followed Prince Lobkowitz into Italy; took the city of Veletri on the 4th of August, in spite of the superior numbers of the enemy; entered their camp, overthrew several regiments, and took many prisoners. The following year he was recalled into Bavaria, where he took the town of Wilshosen by assault, and received a dangerous wound in the thigh. The same year he was made general of artillery; and in January 1746 he marched for Italy at the head of a body of eighteen thousand men. He then drove the Spaniards out of the Milanese; and having joined the forces under Prince de Lichtenstein, he commanded the left wing of the Austrian army at the battle of Placentia on the 15th of June 1746, and defeated the right wing of the enemy's forces commanded by Marshal de Maillebois. After this victory he commanded in chief the army against the Genoese; seized the pass of Bocchetta, though defended by above four thousand men; and took the city of Genoa. Count Brown at length joined the king of Sardinia's troops, and, in conjunction with them, took Mont-Alban and the county of Nice. On the 30th of November he passed the Var in spite of the French troops; entered Provence; took the isles of St Margaret and St Honorat; and expected to have rendered himself master of a much greater part of Provence, when the revolution which happened in Genoa, and Marshal Belleisle's advancing with his army, obliged him to execute that fine retreat which procured him the admiration and esteem of all persons skilled in war. He employed the rest of the year 1747 in defending the states of the house of Austria in Italy; and after the peace in 1748 he was sent to Nice, to regulate there, in conjunction with the Duke of Belleisle and the Marquis de la Minas, the differences that had arisen with respect to the execution of some of the articles of the definitive treaty of Aix-la-Chapelle.

The empress queen, to reward these signal services, especially his glorious campaign in Italy in 1749, made him governor of Transylvania, where he rendered himself generally admired for his probity and disinterestedness. In 1752 he obtained the government of the city of Prague, with the chief command of the troops in that kingdom; in 1753 the king of Poland, elector of Saxony, honoured him with the collar of the order of the White Eagle; and the next year he was declared field-marshal.

The king of Prussia entering Saxony in 1756, and attacking Bohemia, Count Brown marched against him,

and repulsed that prince at the battle of Lowositz on the 1st of October, though he had only twenty-seven thousand men, and the king of Prussia had at least forty thousand. Seven days after this battle he undertook the famous march into Saxony, to deliver the Saxon troops shut up between Pirna and Königstein; an action worthy of the greatest captains, ancient or modern. He at length obliged the Prussians to retire from Bohemia, for which he was rewarded by being made a knight of the Golden Fleece. Soon afterwards Count Brown hastily assembled an army in Bohemia to oppose the king of Prussia, who had again penetrated into that kingdom at the head of all his forces; and, on the 6th of May, he fought the famous battle of Prague, in which, while he was employed in giving his orders for maintaining the advantages he had gained over the Prussians, he was so dangerously wounded that he was obliged to be carried to Prague, where he died of his wounds, on the 26th of June 1757, at the age of fifty-two. There is reason to believe, that if he had not been wounded, he would have gained the victory, as he had broken the Prussians, and the brave Count Schwerin, one of their greatest generals, was slain.

BROWN, *William*, an English poet of the seventeenth century, was descended from a good family, and born at Tavistock in Devonshire in the year 1590. After he had passed through the grammar school, he was sent to Exeter College, in the University of Oxford, in the beginning of the reign of James I. and became tutor to Robert Dormer, who was afterwards Earl of Carnarvon, and killed at Newbury battle on the 20th of September 1643. He is styled in the public register of the university, "a man well skilled in all kinds of polite literature and useful arts;" *vir omni humana literatura et bonorum artium cognitione instructus*. After he had left the college with his pupil, he was taken into the family of William earl of Pembroke, who had a great respect for him; and he improved his fortune so much that he purchased an estate. His poetical works procured him a very great reputation. Among these may be mentioned:—1. *Britannia's Pastorals*. The first part was published at London, 1613, in folio, and ushered into the world with several copies of verses made by his ingenious and learned friends John Selden, Michael Drayton, Christopher Cook, &c. The second part was printed at London in 1616, and recommended by various copies of verses written by John Glanville, who afterwards became eminent in the profession of the law, and others. These two parts were reprinted in two vols. 8vo in 1625. 2. *The Shepherd's Pipe*, in seven eclogues; London, 1614, 8vo. 3. *An Elegy on the never-enough-bewailed death of Prince Henry*, eldest son of King James I. Mr Wood tells us that it is probable our author wrote several other poems, which he had not seen. It is uncertain when he died.

BROWN, *Thomas*, of facetious memory, as he is styled by Addison, was the son of a farmer in Shropshire, and entered in Christ-church College, Oxford, where he soon distinguished himself by his uncommon attainments in literature. But the irregularities of his life not suffering him to continue long there, he, instead of returning to his father, went to London to seek his fortune. His companions, however, being more delighted with his humour than ready to relieve his necessities, he had recourse to the usual refuge of half-starved wits, scribbling for bread, and published a great variety of poems, letters, dialogues, and other compositions, full of humour and erudition, but often indelicate. Though a good-natured man, he had one pernicious quality, which was rather to lose his friend than his joke.

Towards the latter end of Brown's life, we are informed by Mr Jacob that he was in favour with the Earl of Dorset, who invited him to dinner on a Christmas day, with Mr Dry-

den and some other gentlemen celebrated for their ingenuity, when Mr Brown, to his agreeable surprise, found a bank note of L.50 under his plate, and Mr Dryden at the same time was presented with another of L.100. Mr Brown died in the year 1704, and was interred in the cloister of Westminster Abbey, near the remains of Mrs Behn, with whom he was intimate in his lifetime. His works have been printed both in 8vo and 12mo, making four volumes.

BROWN, *Dr John*, a clergyman of the church of England, and an ingenious writer, was born at Rothbury in Northumberland in November 1715. His father, John Brown, was a native of Scotland, being descended of the Browns of Colstown, near Haddington; and at the time of his son's birth he was curate to Dr Tomlinson, rector of Rothbury. He was afterwards collated to the vicarage of Wigton in Cumberland, to which place he carried his son, who received the first part of his education there. Thence he was removed in 1732 to the University of Cambridge, and entered of St John's College, under the tuition of Dr Tunstall. After taking the degree of bachelor of arts with great reputation, being among the list of wranglers, and his name at the head of the list, he returned to Wigton, and received both deacon's and priest's orders from Sir George Fleming, bishop of Carlisle. Here he was appointed by the dean and chapter a minor canon and lecturer of the cathedral church. For some years he lived in obscurity; and nothing further is known concerning him than that in 1739 he went to Cambridge to take his degree of master of arts. In 1745 he distinguished himself as a volunteer in the king's service, and behaved with great intrepidity at the siege of Carlisle. After the defeat of the rebels, when several of them were tried at the assises held at Carlisle in the summer of 1746, he preached at the cathedral church of that city two excellent discourses, on the mutual connection between religious truth and civil freedom; and between superstition, tyranny, irreligion, and licentiousness.

Mr Brown's attachment to the royal cause and to the Whig party procured him the friendship of Dr Osbaldeston, who was the only person that continued to be his friend through life; the peculiarities of his temper, or some other cause, having produced quarrels with every one else. When Dr Osbaldeston was advanced to the see of Carlisle, he appointed Mr Brown one of his chaplains.

It was probably in the early part of his life, and during his residence at Carlisle, that Mr Brown wrote his poem entitled *Honour*, inscribed to Lord Viscount Lonsdale. Our author's next poetical production was his *Essay on Satire*, which was of considerable advantage to him both in point of fame and fortune. It was addressed to Dr Warburton, to whom it was so acceptable, that he took Mr Brown into his friendship, and introduced him to Ralph Allen, Esq. of Prior Park, near Bath, who behaved to him with great generosity, and at whose house he resided for some time.

In 1751 Mr Brown published his *Essay on the Characteristics of Lord Shaftesbury*, dedicated to Ralph Allen, Esq. This was received with a high degree of applause, though several persons attempted to answer it. In 1754 our author was promoted by the Earl of Hardwicke to the living of Great Horshesley in Essex.

In 1755 our author took the degree of doctor of divinity at Cambridge. This year he published his tragedy of *Barbarossa*; which, under the management of Mr Garrick, was acted with considerable applause, although, when it came to be published, it was exposed to a variety of strictures and censures. This tragedy introduced our author to the acquaintance of that eminent actor, by whose favour he had a second tragedy, named *Athelstane*, represented at Drury-Lane theatre. This was also well re-

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ceived by the public, but did not become so popular as Barbarossa, nor did it preserve so long the possession of the stage.

In 1757 appeared his well-known *Estimate of the Manners and Principles of the Times*. The chief design of this performance was to show, that a vain, luxurious, and selfish effeminacy in the higher ranks of life marked the character of the age; and to point out the effects as well as sources of this effeminacy. Several antagonists appeared, some of whom were neither destitute of learning nor ingenuity; though Dr Brown himself asserted that Mr Wallace, a clergyman of Edinburgh, was the only candid and decent adversary that appeared against him. In 1758 our author published the second volume of his *Estimate of the Manners and Principles of the Times*, containing additional remarks on the ruling manners and principles, and on the public effects of those manners and principles. The periodical critics, whom he had gone out of his way to abuse, treated him with uncommon severity; and such a multitude of antagonists rose against him, and so many objections were urged upon him, by friends as well as enemies, that he seems to have been deeply impressed, and to have retired for a while into the country. From the country it was that he wrote, in a series of letters to a noble friend, *An Explanatory Defence of the Estimate of the Manners and Principles of the Times*; being an appendix to that work, occasioned by the clamours lately raised against it among certain ranks of men.

In 1760 he published an *Additional Dialogue of the Dead*, between Pericles and Aristides; being a sequel to a dialogue of Lord Lyttleton's between Pericles and Cosmo. One design of this additional dialogue was to vindicate the measures of Mr Pitt, against whose administration Lord Lyttleton had been supposed to have thrown out some hints. Our author's next publication, in 1763, was *The Cure of Saul*, a sacred ode; which was followed in the same year by *A Dissertation on the Rise, Union, and Power, the Progressions, Separations, and Corruptions of Poetry and Music*. This is one of the most pleasing of Dr Brown's performances, and abounds with a variety of critical discussions. A number of strictures on this piece were published; and the doctor defended himself in a treatise entitled *Remarks on some Observations on Dr Brown's Dissertation on Poetry and Music*. In 1764 he published, in octavo, *The History of the Rise and Progress of Poetry through its several Species*; which is no more than the substance of the dissertation above mentioned. The same year Dr Brown published a volume of sermons, dedicated to his patron Dr Osbaldeston, bishop of London; but most, if not all, of these, had been separately published, excepting the first three, which were on the subject of education. In the beginning of the year 1765 the doctor again returned to politics, and published *Thoughts on Civil Liberty, Licentiousness, and Faction*. At the conclusion of this work the author prescribed a code of education, upon which Dr Priestley made remarks at the end of his *Essay on the Course of a liberal Education for civil and active Life*. The same year he published a sermon *On the Female Character and Education*, preached on the 16th of May 1766, before the guardians of the asylum for deserted female orphans. His last publication was in 1766, being a *Letter to the Rev. Dr Lowth*, occasioned by his late *Letter to the right reverend Author of the Divine Legation of Moses*. This was occasioned by Dr Lowth's having clearly, though indirectly, pointed at Dr Brown as one of the extravagant adulators and defenders of Bishop Warburton. Besides these works, Dr Brown published a poem on *Liberty*, and two or three anonymous pamphlets. At the end of several of his latter writings he advertised his design of publishing *Christian*

Principles of Legislation; but he was prevented from executing it by his unhappy death. He put a period to his life on the 23d of September 1766, in the fifty-first year of his age, by cutting the jugular vein with a razor. Such was the end of this ingenious writer; but the manner of it, when some previous circumstances of his life are understood, will cast no stain on his character. He had a tendency to insanity in his constitution; and, from his early life, had been subject at times to some disorder in his brain, at least to melancholy in its excess.

BROWN, *Simon*, a dissenting minister, whose uncommon talents and singular misfortunes justly entitle him to a place in this work, was born at Shepton Mallet, in Somersetshire, 1680. Grounded and excelling in grammatical learning, he early became qualified for the ministry, and actually began to preach before he was twenty. He was first called to be a pastor at Portsmouth, and afterwards removed to the Old Jewry, where he was admired and esteemed for a number of years. But the death of his wife and only son, which happened in 1723, affected him so as to deprive him of his reason; and he became from that time lost to himself, to his family, and to the world. His congregation at the Old Jewry, in expectation of his recovery, delayed for some time to fill his office; but at length all hopes were over, when Mr Samuel Chandler was appointed to succeed him in 1725. This double misfortune affected him at first in a manner little different from distraction, but afterwards sunk him into a settled melancholy. He quitted the duties of his function, and would not be persuaded to join in any act of worship, public or private. Some time after his secession from the Old Jewry he retired to Shepton Mallet, his native place; and though in his retirement he was perpetually contending that his powers of reason and imagination were gone, yet he was as constantly exerting both with much activity and vigour. He amused himself sometimes with translating parts of the ancient Greek and Latin poets into English verse, and he composed little pieces for the use of children; an English Grammar and Spelling Book; an Abstract of the Scripture History, and a Collection of Fables, both in metre; and with much learning he brought together in a short compass all the *Themata* of the Greek and Latin tongues, and also compiled a Dictionary to each of those works, in order to render the learning of both these languages more easy and compendious. Of these performances none have been made public. But what showed the strength and vigour of his understanding, while he was daily bemoaning the loss of it, were the works composed during the two last years of his life, in defence of Christianity, against Woolston and Tindal. He wrote an answer to Woolston's fifth Discourse on the Miracles of our Saviour, entitled a fit Rebuke for a ludicrous Infidel; with a preface concerning the prosecution of such writers by the civil power. His book against Tindal was called a Defence of the Religion of Nature and the Christian Revelation, against the defective account of the one and the exceptions against the other, in a book entitled Christianity as old as the Creation. Mr Brown survived the publication of this last work a very short time. A complication of distempers, contracted by his sedentary life (for he could not be prevailed on to refresh himself with air and exercise) brought on a mortification, which put a period to his labours towards the close of the year 1732. Besides the two pieces above mentioned, and before he became ill, he had published some single Sermons, together with a Collection of Hymns and Spiritual Songs. He left several daughters.

BROWN, *Isaac Hawkins*, an ingenious English poet, was born at Burton-upon-Trent, in Staffordshire, on the 21st January 1705-6, of which place his father was the minister.

He received his grammatical instruction first at Lichfield, and then at Westminster; whence, at sixteen years of age, he was removed to Trinity College, Cambridge, of which his father had been fellow. He remained there till he had taken a master of arts degree, and about 1727 settled himself in Lincoln's-inn, where he seems to have devoted more of his time to the muses than to the law. Soon after his arrival there he wrote a poem on Design and Beauty, which he addressed to Mr Highmore the painter, for whom he had a great friendship. Several other poetical pieces were written here, and particularly his Pipe of Tobacco. This piece is in imitation of Cibber, Ambrose Phillips, Thomson, Young, Pope, and Swift, who were then all living, and is reckoned one of the most pleasing and popular of his performances. In 1744 he married the daughter of Dr Trimmell, archdeacon of Leicester. He was chosen twice to serve in parliament, first in 1744, and afterwards in 1748; both times for the borough of Wenlock in Shropshire, near which place he possessed a considerable estate, which came from his maternal grandfather, Isaac Hawkins, Esq. In 1754 he published what has been deemed his capital work, *De Animi Immortalitate*, in two books; in which, besides a most judicious choice of matter and arrangement, he is thought to have shown himself not a servile but happy imitator of Lucretius and Virgil. The universal applause and popularity of this poem produced several English translations of it in a very short time; the best of which is that by Soame Jenyns, Esq. printed in his Miscellanies. Mr Brown intended to have added a third part, but went no farther than to leave a fragment. This excellent person died, after a lingering illness, in 1760, aged fifty-five. In 1768 Hawkins Brown, Esq. obliged the public with an elegant edition of his father's poems, in large octavo; to which is prefixed a print of the author, from a painting of Mr Highmore, engraved by Ravenet.

Brown, *Sir William*, a noted physician and multifarious writer, was settled originally at Lynn in Norfolk, where he published a translation of Dr Gregory's Elements of Catoptrics and Dioptrics; to which he added, 1. A method for finding the Foci of all Specula, as well as Lenses universally, as also magnifying or lessening a given object by a given Speculum or Lens, in any assigned Proportion; 2. A Solution of those Problems which Dr Gregory has left undemonstrated; 3. A particular Account of Microscopes and Telescopes, from Mr Huygens, with the discoveries made in Catoptrics and Dioptrics. Having acquired a competence by his profession, he removed to Queen's Square, Ormond Street, London, where he resided till his death. By his lady, who died in 1763, he had one daughter, grandmother to Sir Martin Browne Folkes, baronet. A great number of lively essays, both in prose and verse, the production of his pen, were printed and circulated among his friends. The active part taken by Sir William Brown in the contest with the licentiates, 1768, occasioned his being introduced by Mr Foote in his *Devil upon Two Sticks*. Upon Foote's exact representation of him, with his identical wig and coat, tall figure, and glass stiffly applied to his eye, he sent him a card complimenting him on having so happily represented him; but as he had forgotten his muff, he had sent him his own. This good-natured method of resenting disarmed Foote. He used to frequent the annual ball at the ladies' boarding-school, Queen Square, merely as a neighbour, a good-natured man, and fond of the company of sprightly young folks. A dignitary of the church being there one day to see his daughter dance, and finding this upright figure stationed there, told him he believed he was Hermippus redivivus, who lived *in helitu puellarum*. When he lived at Lynn, a pamphlet was written against him, which he nailed up against his house door. At the age of eighty, on St Luke's day

1771, he came to Batson's coffee-house in his laced coat and band, and fringed white gloves, to show himself to Mr Crosby, then lord mayor. A gentleman present observing that he looked very well, he replied, "he had neither wife nor debts." He died in 1774, at the age of eighty-two; and by his will he left two prize medals to be annually contended for by the Cambridge poets.

BROWN, *John*, the founder of the Brunonian Theory of Physic, was born about the year 1735 or 1736, in the parish of Buncle, in Berwickshire, Scotland. His parents being in an inferior rank of life, while he was very young he was put as an apprentice to a weaver, the drudgery of which having either disliked, or discovering abilities which by cultivation would raise him to a more conspicuous station, his destination was changed, and he was placed at the grammar school of Dunse. Here he soon distinguished himself, and gave abundant proofs, by his ardour and success in the studies which occupied his attention, that he was worthy of being encouraged in literary pursuits. His parents belonged to that body of dissenters in Scotland called Seceders. Flattered with the rapid and successful progress which their son had begun to make in the acquisition of the Latin language, they destined him to the ministerial office among their own sect. With this view his education was for some time directed. But an accident, it is said, made him at once renounce this plan and the sect, the tenets of which, as will appear from this circumstance, are extremely rigid. So early as his thirteenth year, while at the grammar school, he was prevailed upon, though not without showing considerable reluctance, to attend a meeting of synod, one of the ecclesiastical courts of Scotland, which was held in the church of Dunse. This, in the estimation of the party to which he belonged, was a transgression which could not be passed over without notice. Young Brown was called upon to appear before the session, and required either to submit to ecclesiastical censure, or to suffer a sentence of expulsion. Too proud and indignant to yield to the one, or to wait for the other, he anticipated or prevented the effects of both, by declaring that he was no longer a member of the sect, and joined himself to the established church. From this time, it would appear, his religious ardour was much abated, and his rigid principles were greatly relaxed.

After this period Brown was for some time engaged as a private tutor in a gentleman's family in the country; and here, and as an assistant in the grammar school of Dunse, he remained till about his twentieth year, when he went to Edinburgh, and having passed through the previous necessary studies in the classes of philosophy, entered himself as a student of divinity in the university. His classical knowledge was now of real advantage to him; for while he resided in Edinburgh pursuing the plan of his studies, he was able to support himself by private teaching. In this situation he continued for some time, after which he resumed his former labours as assistant in the grammar school of Dunse for a year, and returned to Edinburgh about the year 1759, when he finally renounced the study of theology, and commenced that of physic.

During his medical studies, he supported himself by his own exertions. He was employed in giving private instructions to students who wished to acquire the habit of expressing themselves with facility and correctness in the Latin language, and to be thus prepared for the examinations which were conducted in that language, for medical degrees in the university. For this employment, as well as for translating inaugural dissertations into the same language, the previous studies and acquirements of Brown peculiarly fitted him. Thus occupied, he soon recommended himself to the notice of several of the professors, and particularly to that of Dr Cullen, whose patronage

Brown.

and friendship he obtained in an eminent degree. The doctor not only employed him as a private tutor in his own family, but was extremely assiduous in recommending him to others. This situation afforded him an excellent opportunity of improving in medical studies by the conversation of that celebrated professor, and by the permission which was granted him of delivering to private pupils illustrations of the doctor's public lectures. In this way Mr Brown began to have full employment, and prosperity seemed to smile upon him. It was about this time that he married the daughter of a respectable tradesman in Edinburgh, and opened a house for boarding students. His house was soon filled with boarders, who were attracted by the hope of great benefit from his instructions and conversation. But here it soon appeared that he was unfit for the management of such concerns. By want of economy, or by misconduct, his affairs were soon greatly embarrassed, and at last terminated in total bankruptcy. Soured and irritated by this misfortune, and still more so, it is probable, by being disappointed of one of the medical chairs in the university, which he supposed had been occasioned by the interference of Dr Cullen, he quarrelled with his friend and patron, and from that moment set himself up as a keen opponent of his doctrines.

It was in the year 1780 that the first edition of his *Elementa Medicinæ* appeared. This work is a compendium of his opinions, which he continued for several years to illustrate by a course of public lectures. And as he now proposed to prosecute the profession of medicine by private practice and public instruction, it was found necessary to have a medical degree, as a testimony to the world of his qualifications. Having opposed and quarrelled with all the professors in the University of Edinburgh, there was little hope of his succeeding there; and he was therefore induced to make an excursion to St Andrews, when he took the degree of M. D.

But the terms on which Dr Brown lived with his medical brethren, and the unfortunate habits which were daily gathering strength, precluded him from all rational hopes of success, either as a private practitioner or a public teacher. He therefore turned his thoughts to London, and removed to that metropolis in the year 1786. Previous to 1788 he had delivered one course of lectures; for in October of this year he was cut off by a fit of apoplexy, on the day after he had delivered his introductory lecture to a second course. He died in the fifty-third year of his age.

Dr Brown possessed great vigour of mind, and seems to have been capable of considerable application. His talents, had they been directed to more practical and more useful objects, would have probably raised him to more eminent distinction, and rendered him a more valuable member of society. The style of his *Elementa* is harsh and unpolished. His meaning is often dark and ambiguous. But perhaps this want of perspicuity is as much owing to the subjects which he treated, the principles of which are far from being settled, as to the obscurity of his expression. He attempted an unbeaten path; it is not wonderful that he was often bewildered.

Brown, William Laurence, born at Utrecht on the 7th of January 1755, was the son of the Rev. William Brown, minister of the English church in that city, and of his wife Janet Ogilvie, daughter of the Rev. George Ogilvie, minister of Kirriemuir. The father, having been appointed professor of ecclesiastical history in the university of St Andrews, returned to his native country in the year 1757; and the son was in due time sent to the grammar school, but his early education was chiefly of a more domestic nature. The professor was regarded as a great proficient in Latin literature, and his public lectures were

partly delivered in that language. At the early age, we may safely say at the too early age, of twelve, his son became a student in the university. It is still a prevalent error in the same country, to send boys to college at a period of life when they are scarcely prepared for a high form in a well-appointed grammar school; and till we depart from this common practice, we shall have too much reason to regret the condition of our public seminaries of learning. Brown was however a youth of superior talents, and he possessed some domestic advantages beyond the ordinary lot. The branches of study to which he chiefly devoted his attention were classical literature, logic, and ethics; and notwithstanding his premature age, he passed through his academical course with no small distinction. Of the prizes distributed by the chancellor of that period, the earl of Kinnoull, he obtained a greater number than fell to the share of any other competitor. Two of his college friends were William Thomson, LL. D., well known in the literary world, and Mr Gray, who afterwards resided in a diplomatic capacity at some of the courts of Germany. When he was of five years standing, he became a student of divinity; and after a further residence of two years, namely in 1774, he removed to the university of Utrecht, where he not only prosecuted the study of theology, but likewise of the civil law. Leyden and Utrecht had long been eminently distinguished as schools of jurisprudence; and Mr Brown, whose views were liberal and enlarged, perceived the various advantages which a knowledge of the Roman law confers, not merely upon the professional lawyer, but even upon the classical scholar. From this study he frequently declared that he had derived essential benefit.

His uncle, Dr Robert Brown, had succeeded as minister of the English church at Utrecht; and after his decease, which took place in the year 1777, the magistrates of that city, in compliance with the general wishes of the congregation, offered the vacant charge to his young relation. This invitation he finally accepted, though not without some degree of reluctance. After having spent nearly a year in Scotland, where he was licensed and ordained by the presbytery of St Andrews, he was admitted minister of the English church at Utrecht in the month of March 1778. His congregation was highly respectable, but at the same time was far from being numerous, and consequently his sphere of professional utility was very circumscribed. We are informed that although the congregation seldom exceeded forty persons, his preparation for the pulpit was not less assiduous than at Aberdeen, where he had to address a larger audience; for he was of opinion that the minister of the gospel who cannot find, in the dignity and importance of his office, and in his attachment to the spiritual interests of his flock, however small, a stimulus to exertion sufficiently powerful, will never find it in what is termed a wider field, or what is considered as a more important station. As it was only incumbent upon him to preach once every Sunday, he possessed a sufficient degree of literary leisure; and he increased his income as well as his avocations by receiving pupils into his house. He was intrusted with the education of many young men of rank and fortune; nor is it superfluous to mention that one of these was the present Lord Dacre, of whom he has spoken in very favourable terms. His character and conduct were such as could not fail to secure the cordial attachment of his own little flock: he gradually extended his acquaintance among individuals distinguished by their talents and learning, as well as by their station and influence; and he enlarged his sphere of knowledge and observation by various excursions in France, Germany, and Switzerland. On the 28th of May 1786, he married his own cousin, Anne Eliza-

both Brown, the daughter of his immediate predecessor. This excellent woman, who was likewise a native of Holland, became the mother of five sons and four daughters, and all of them still survive.

At an early period of his life he had begun to distinguish himself by his superior talents, and by his superior proficiency in various branches of knowledge. The curators of the Stolpian Legacy at Leyden, appropriated to the encouragement of theological learning, having in the year 1783 proposed as the subject of their annual prize that most difficult of all questions, the origin of evil, he appeared in the list of twenty-five competitors. The first prize was awarded to Joseph Paap de Fagoras, a learned Hungarian; but the second honour, namely, that of publication at the expense of the trust, was adjudged to the dissertation of Mr Brown. It was accordingly printed among the memoirs of the society, under the title of "*Disputatio de Fabrica Mundi, in quo Mala insunt, Naturæ Dei perfectissimæ haud repugnante.*" Other honours awaited him about the same period. He had formerly taken the degree of A. M. at St Andrews, and in 1784 the same university created him D. D. On three different occasions he obtained the medals awarded by the Teylerian Society at Haarlem for the best compositions in Latin, Dutch, French, or English, on certain prescribed subjects. His essay on scepticism obtained the gold medal in 1786, his dissertation on the immortality of the soul the silver medal in 1787, and his essay on the natural equality of men the silver medal in 1792. The dissertation, which was written in Latin, has never been printed, but the two English essays were in due time given to the public. "*An Essay on the Folly of Scepticism, the Absurdity of Dogmatizing on Religious Subjects, and the proper Medium to be observed between these two extremes.*" Lond. 1788, 8vo. "*An Essay on the natural Equality of Men, the Rights that result from it, and the Duties which it imposes.*" Edinb. 1793, 8vo. The latter work, which was the most successful of all his publications, was reprinted at London in the course of the following year. Many of us are old enough to remember the political and intellectual fermentation of that eventful period, when the wildest reveries of one class of men were opposed by the superannuated bigotry of another. Dr Brown's work, although it evinces sufficient liberality, is at the same time sober and discriminating: it was considered as an able and a seasonable discussion of topics which had been so egregiously perverted; it even attracted the attention of the British government, and had no small influence in preparing the way for his subsequent preferment.

Before this period he had been appointed to a professorship in the university of Utrecht. He had for some time been involved in considerable difficulties, in consequence of the civil commotions which arose between the partizans of the house of Nassau and those who delighted in the name of patriots. He was led to regard the authority and influence of the prince as the best security against the tyranny of the aristocracy, and he accordingly became a decided adherent of the Orange party.¹ Although he was not exposed to any direct molestation on account of his political opinions and connexions, yet during the temporary triumph of the opposite party, he found himself placed in a situation both precarious and harassing. In

the expectation of removing himself beyond their power, he began to cast an anxious glance towards the land of his fathers; but after he had repaired to London with the view of obtaining some literary or ecclesiastical appointment in Scotland, the armed interposition of the Prussians occasioned a sudden change in the government of Holland. The friends of Dr Brown had now regained their ascendancy, and were anxious to testify their approbation of his public conduct and personal merit: the states and the magistrates of Utrecht jointly instituted a professorship of moral philosophy and ecclesiastical history, and appointed him to this new office. The lectures were to be delivered in the Latin language; and two courses, were to be commenced during a session of nearly eight months, to be continued after an interval of not many weeks. So great an effort was very prejudicial to his health, and laid the foundation of complaints by which he was frequently harassed during the remainder of his life.

On entering upon the duties of his office, he pronounced an inaugural oration, which was immediately published under the title of "*Oratio de Religionis et Philosophiæ Societate et Concordia maxime salutari.*" Traj. ad Rhen. 1788, 4to. Two years afterwards he was nominated rector of the university; and on depositing his temporary dignity, he pronounced an "*Oratio de Imaginatione, in Vitæ Institutione, regunda.*" Traj. ad Rhen. 1790, 4to. During this interval he had been offered the Greek professorship at St Andrews; but the curators of the university of Utrecht induced him, by a promise of augmenting his salary, to retain a situation in which he had acquitted himself with eminent ability. To his other offices was now added the professorship of the law of nature; a branch of study to which a great degree of attention had long been devoted in the universities of Holland and Germany. It has usually been conjoined with the law of nations, and taught by members of the law faculty; but we have already seen that the previous studies of Dr Brown had been partly juridical, and indeed this department is most intimately connected with ethics. By the professors of moral philosophy in the Scottish universities, particularly by Dr Hutcheson, and his predecessor Mr Carmichael, the law of nature was at one period regularly discussed as an essential part of their course; nor were the general principles of law excluded from the ethical course of a more recent professor of eminence, the late Dr Ferguson.

Dr Brown resided at Utrecht, and discharged his public duties with credit and reputation, till the war which followed the French revolution finally drove him from the place of his nativity. After a long interval of painful anxiety and suspense, he was at length impelled, by the rapid approach of the invading army, to seek a place of refuge. In the course of a very severe winter, he embarked in the month of January 1795, and with his wife and five children, together with some other relations, quitted the coast of Holland in an open boat, and landed in England after a stormy passage. Having proceeded to London, he experienced such a reception as was due to his literary talents and moral worth. During the late Lord Auckland's embassy at the Hague, he had formed more than a common acquaintance with that nobleman, who was himself a person of literature, and a judge of li-

¹ The same political sentiments were adopted by the most eminent scholars of that period. "*Ita enim judicabat [Hemsterhusius], et rei publicæ opus esse gubernatore, qui totum ejus corpus curaret atque ad consensum dirigeret, et civibus quasi tribuno plebis, qui eos adversus patriciorum dominationem ac libidinem tueretur. Item et Ruhnkenius et Valckenarius judicabant. Postea, quum optima instituta præsidiæque libertatis a publico ad privatum commodum traduci, et bello Britannico imperia ac successus prævaricando eludi viderentur, uterque partes optimatum probare cœperunt, ut solas vindices gloriæ ac prosperitatis Batavæ adversus hostilem injuriam.*" (Wyttenbachii *Vita Davidis Ruhnkenii*: Opuscula, tom. i. p. 695. Lugd. Bat. 1821, 2 tom. 8vo.)

Brown. terary merit: his *Principles of Penal Law* are a respectable monument of his intellectual attainments, and he published other works of a more temporary nature. Having conceived a very favourable opinion of the professor, he had some years before recommended him to the notice of Dr Moore, archbishop of Canterbury; and it was to their united influence that he was chiefly indebted for the honourable station in which he terminated his long and useful life. A distant prospect of succeeding to the divinity chair at Aberdeen had presented itself at a much earlier period. Dr Campbell, who was bending beneath the load of years, had expressed a wish to resign his offices. The proposal of a pension, which his public services had well earned, and the nomination of a successor with whose acquirements he was duly acquainted, now led to the completion of such an arrangement as he entirely approved: he first resigned the professorship of divinity, and in the summer of 1795 the magistrates of Aberdeen presented Dr Brown to that chair; the office of principal of Marischal College having been vacated soon afterwards, he received a presentation from the crown, and entered upon his new functions at the commencement of the ensuing session. With his distinguished predecessor he formed a most cordial friendship, which however was suspended by the feeble thread of a very lengthened life. Dr Campbell died in the ensuing month of April, and Dr Brown honoured his memory by a funeral sermon, which was immediately printed. Aberd. 1796, 8vo. This venerable person, long the chief ornament of the university, was a man of great acuteness and perspicacity, united with accurate and extensive learning: his *Philosophy of Rhetoric* is a work of very singular merit, and the value of his theological writings has been universally acknowledged. Dr Beattie, an elegant and accomplished writer of verse as well as prose, was still a member of the same college; and to these conspicuous names we must add that of Dr Hamilton, professor of mathematics, whose *Inquiry into the National Debt* first exposed the futility and delusion of the sinking fund.

This new professorship imposed upon him a very serious task. He composed, as we are informed, a course of theological lectures, extending over five sessions. After a review of the different systems of religion, those laying claim to a divine origin, he discussed most amply the evidences and doctrines of natural religion. He then proceeded to the evidences of revealed religion, of which he gave a very full and learned view. The Christian scheme formed the next subject of an enquiry, in which the peculiar doctrines of Christianity were very extensively unfolded. Christian ethics were also explained; and it formed part of his original plan to treat of all the great controversies that have agitated the religious world. This portion of the course was not however completed.—It is observable that, in this extensive outline, no department is allotted to biblical literature, which in the Scottish universities has been too much neglected. But in King's College two successive professors of the same family assigned a particular part of their academical course to this very important subject; and the younger of them, Dr Gilbert Gerard, further recommended the study by the publication of his *Institutes of Biblical Criticism*, printed at Edinburgh in the year 1808.

Dr Brown soon became a very conspicuous member of the church of Scotland. He was an impressive preacher, a prompt and forcible speaker, and some of his appearances in the general assembly produced a powerful effect. The manly temperament of his mind rendered him incapable of cowering to mere rank and station; and his first aspect, with the first sound of his voice, conveyed to those who saw and heard him the idea that he was no ordinary person. His speech on the case of Dr Arnot, delivered

in the first assembly of which he was a member, classed him among the best public speakers of the time. It was printed in a separate form, under the title of "Substance of a Speech delivered in the General Assembly of the Church of Scotland, on Wednesday the 28th of May 1800, on the Question respecting the Settlement, at Kingsbarns, of the Rev. Dr Robert Arnot, Professor of Divinity in St Mary's College, St Andrews." Edinb. 1800, 8vo. His public opposition to pluralities in the church has very frequently been represented as inconsistent with his private practice; but this inconsistency was less real than apparent. The office of principal, though honourable, was not very lucrative: for a considerable time it had generally been united with the professorship of divinity; but in one instance it was held by a layman, Dr Blackwell, the learned professor of Greek. And for the same reason, the want of an adequate endowment, the divinity professorship had been conjoined with the charge of a minister of the West Church; but the professor was only bound to preach alternately with his colleague, and was exempted from all the other routine of parochial duties. Most of the other preferments subsequently bestowed upon him were altogether unconnected with professional exertion.

For several years he regularly attended the assembly, and, steadily adhering to the popular party, took a conspicuous share in its public deliberations; but it has been truly remarked that although he could be roused to the most lively interest in general questions, he felt no inclination to learn or to practise the tactics of a leader in the ecclesiastical courts. The discharge of his academical and pastoral duties was better adapted to his taste and disposition. These duties he discharged with much zeal and ability; and his ordinary habits being sedentary and studious, he found sufficient leisure for his favourite pursuits of literature. Together with genuine piety and theological knowledge, he was particularly anxious to disseminate a taste for classical learning. It was his practice to deliver a Latin oration to the professors and students of his college at the commencement of each session; and he bestowed particular attention on the style of the Latin exercises read in the divinity hall.

Of the energy of his pulpit discourses he has left an adequate specimen in his printed volume of *Sermons*. Edinb. 1803, 8vo. But the most serious of his intellectual efforts was the essay which obtained Burnet's first prize, amounting to L.1250. The competitors were about fifty in number; and the judges were Dr Gerard, professor of divinity, Dr Glennie, professor of moral philosophy, and Dr Hamilton, professor of mathematics. The second prize, amounting to L.400, was awarded to Dr Sumner, the present bishop of Chester. Dr Brown's work was published under the title of "An Essay on the Existence of a Supreme Creator," &c. Aberd. 1816, 2 vols. 8vo. The last considerable work which he committed to the press was "A comparative View of Christianity, and of the other Forms of Religion which have existed, and still exist, in the World, particularly with regard to their moral Tendency." Edinb. 1826, 2 vols. 8vo. This is a production of varied learning and of solid merit, but being the result of mature thought, and being written in a sober and manly style, it was less calculated to attract the mobility of readers; for there is a fashion in theology as well as in novels.

In the year 1800 Dr Brown had been appointed chaplain in ordinary to his majesty, and in 1804 dean of the chapel royal, and of the most ancient and most noble order of the Thistle. He was last of all appointed to read the Gordon lecture in Marischal College, and he delivered his inaugural discourse on the 22d of November 1825. It was published under the title of a "Lecture introductory

own. to the Course of Practical Religion, instituted by the Will of John Gordon, Esq. of Murtle." *Aberd.* 1826, 8vo.

All his publications have not yet been enumerated. Before he quitted Utrecht, he had published a poem entitled "An Essay on Sensibility;" and at a more recent period he sent to the press "Philemon, or the Progress of Virtue; a Poem." *Edinb.* 1809, 2 vols. 8vo. Beside the works which we have mentioned, he printed several detached sermons, and likewise the following tracts. *An Examination of the Causes and Conduct of the present War with France, and of the most effectual Means of obtaining a speedy, a secure, and an honourable Peace: together with some Observations on the late Negotiations at Lisle.* *Lond.* 1798, 8vo. This pamphlet was published without the author's name. *Letters to the Rev. Dr George Hill, Principal of St Mary College, St Andrews.* *Aberd.* 1801, 8vo. *Remarks on certain Passages of "An Examination of Mr Dugald Stewart's Pamphlet, by one of the Ministers of Edinburgh;" relative to subjects nearly connected with the Interests of Religion and Learning.* *Aberd.* 1806, 8vo. *A Letter to George Hill, D. D. Principal of St Mary's College, St Andrews; occasioned by the publication of the Substance of his Speech in the General Assembly, May 23, 1807.* *Edinb.* 1807, 8vo. *Nobilissimi Viri, Georgii Marchionis de Huntly, Domini de Gordon, Provinciae Aberdonensis Præfecti Regii, Academiae Marischallanae Cancellarii, xxii^{do} Decembris die anno Christi M.DCCC.XV^{to} inaugurandi Formula atque Modus.* *Aberdoniæ,* 1816, 4to. *Librorum Societas; Carmen, recitatum in Comitibus Academicis quæ prima post Ferias æstivas an. M.DCCC.XXIX. habebantur.* *Aberd.* 1830, 8vo.

Although his health had never been robust, and he reached a very advanced period of life, he retained his mental faculties till the day of his death; and his dissolution was rather occasioned by the gradual decay of his bodily frame, than by any acute suffering. For two years his strength had imperceptibly declined; and although the decline became rapid about a week before his decease, yet he did not relinquish his usual employments. Reduced as he was to extreme weakness, he wrote part of a letter to two of his sons on the very last day of his mortal existence: to his third son, the Greek professor in Marischal College, he dictated a few sentences within six hours of his decease. Having been assisted to move from his bed-chamber to the parlour, he continued till midnight in the society of his family: after joining in their domestic devotions, he was with much difficulty removed to his bed; he then slept quietly for three hours, and having repeatedly spoken in a cool and intelligible manner, he calmly breathed his last at four in the morning. So gently was the spark of life extinguished, that his family did not mark the precise time. He died on the eleventh of May 1830, in the seventy-sixth year of his age. It has been faithfully stated that the regrets of his fellow-citizens, and of a numerous circle of friends in various parts of the kingdom, have paid to his character the most affecting and unequivocal tribute which can be offered to the memory of those who have neither lived unnoticed nor died unhonoured. And we cannot refrain from adding, in the words of Minucius Felix, "*Nec immerito discedens vir eximius et sanctus, immensum sui desiderium nobis reliquit.*"

Dr Brown was of the middle size, and had a very intelligent countenance. He had been much accustomed to elegant society, and his manners were easy and polished, but, in a certain sense, he never could be initiated in the ways of the world: he possessed an unusual singleness of heart, and so habitual a regard for what is upright and manly in the human character, that he not unfrequently displayed his caution less prominently than his honesty. He was not without considerable warmth of temper, but at the

same time he was open, sincere, and generous; nor is this ardour and intensity of feeling so easily separated from quickness of discernment and vigour of perception. Men of a colder temperament, possessing less than one half of his moral excellence, may pass through life with a very decent share of respectability. His talents and learning are not unknown to the public; but his warmth of affection, his rectitude of purpose, and his fervour of piety, are best known to those who had frequent opportunities of seeing him in the circle of his own family, or in the house of an intimate friend. To an unusual share of classical learning Dr Brown added a very familiar acquaintance with several of the modern languages. Latin and French he wrote and spoke with great facility. His successive study of ethics, jurisprudence, and theology, had habituated his mind with the most important topics of speculation, relating to the present condition of man and to his future destiny. His political sentiments were liberal and expansive, not cautiously circumscribed by one party-circle, or coldly limited to one small spot of earth, but connected with ardent aspirations after the general improvement and happiness of the human race. The liberality of his theological opinions was widely removed from indifference. His reading in divinity had been very extensive: he was well acquainted with the works of British and foreign theologians, particularly of those who wrote in the Latin language during the seventeenth century. In his more elaborate publications he evinces no mean portion of erudition, ingenuity, and judgment; but the intellectual vigour and promptitude which he displayed in conversation, were such as to impress many of his friends with a still higher opinion of his capabilities than they derived from any of the numerous works which he communicated to the public.

(x.) *BROWN, Thomas*, an eminent metaphysician, was born at Kirkmabreck, in the stewartry of Kirkcudbright, on the 9th of January 1788, and was the youngest son of the Rev. Samuel Brown, minister of the parish of Kirkmabreck, and of Mary Smith, daughter of John Smith, Esq. of Wigton. His father survived his birth only a short time, and he received the first rudiments of his education from his mother. In the first lesson he learned all the letters of the alphabet, and every succeeding step was equally remarkable. From his seventh till his fourteenth year he was placed, under the protection of a maternal uncle, at different schools in the neighbourhood of London, at all of which he distinguished himself, and made great progress in classical literature. Upon the death of his uncle in 1792, he returned to his mother's house in Edinburgh, and entered as a student in the university.

His attention was first directed to metaphysical subjects by the elegant and benevolent biographer of Burns, Dr Currie of Liverpool, to whom he was introduced in the summer of 1793. About that time the first volume of Mr Stewart's *Elements of the Philosophy of the Human Mind* was published. Dr Currie put a copy of the work into his hands, and was struck not more with the warmth of admiration which the young philosopher expressed, than with the acuteness he displayed in many of his remarks. The next winter he attended Mr Stewart's class; and at the close of one of the lectures of that celebrated philosopher, he went up, though personally unknown, and modestly submitted some difficulties which had occurred to him respecting one of Mr Stewart's theories. Mr Stewart listened to him patiently, and, with a candour which did him infinite honour, informed him that he had just received a communication from the distinguished M. Prevost of Geneva, containing a similar objection. This proved the commencement of a friendship which Dr Brown continued to enjoy till the time of his death.

Brown.

Brown.

It has already been mentioned in one of the preliminary dissertations to this work (p. 395), that at the age of nineteen he took a part with others, some of whom became the most memorable men of their time, in the foundation of a private society in Edinburgh under the name of the Academy of Physies. This society is interesting in the history of letters, as having given rise to the publication of the Edinburgh Review. Some articles in the early numbers of that work were written by Dr Brown, and bear the marks of his genius.

In 1798 he published "Observations on the Zoonomia of Dr Darwin." When it is considered that the greater part of this work was written in his eighteenth year, it may perhaps be regarded as the most remarkable of his productions; and it may be doubted if, in the history of philosophy, there is to be found any work exhibiting an equal prematurity of talents and attainments. Those who take an interest in tracing the progress of intellect will find in it the germ of all his subsequent views in regard to mind, and of those principles of philosophizing by which he was guided in his future inquiries.

In 1803, after attending the usual course pursued by medical students, he took his degree of doctor of medicine.

In the same year he brought out the first edition of his poems, in two volumes. The greater number of the pieces contained in them were written while he was at college. They are of a very miscellaneous description, and are certainly inferior to many of his subsequent compositions; at the same time they all exhibit marks of an original mind, and of a singularly refined taste.

His next publication was an examination of the principles of Mr Hume respecting causation. Though this tract was occasioned by a local controversy, it is entirely of an abstract nature, and all reference to the circumstances that led to the publication is studiously avoided. Its great merits have been universally acknowledged. It was alluded to in the most flattering manner in the Edinburgh Review, in a very able article by Mr Horner; Mr Stewart also gave a valuable testimony as to its excellence; and Sir James Mackintosh has pronounced it the finest model in mental philosophy since Berkeley and Hume. A second edition, considerably enlarged, was published in 1806; and in 1818 it appeared in a third edition, with so many additions and alterations, as to constitute it almost a new work, under the title of "An Inquiry into the Relation of Cause and Effect."

From the time when Dr Brown had taken his degree, he continued for several years to practise as a physician in Edinburgh. In 1806 he was associated in partnership with the late Dr Gregory; and there was every prospect of his attaining in due time the highest eminence in his profession. But success as a physician was not sufficient to satisfy his ambition. The discharge of his professional duties was marked by that assiduous tenderness of attention which might have been expected from a disposition so truly amiable; but still philosophy was his passion, from which he felt it as a misfortune that his duty should so much estrange him.

The period, however, at last arrived when he was to be elevated to a situation suited to his tastes and habits, and where his public duties corresponded with his inclinations. Mr Stewart, in consequence of the gradual decline of his health, being frequently prevented from attending to the duties of his class, found it necessary to have recourse to the assistance of some of his friends during his temporary absence. He therefore applied to Dr Brown, who undertook the arduous task of supplying his place with lectures of his own composition. He first appeared in the moral philosophy class in the winter of 1808-9. At this time, however, there was no great call for his exertions, as Mr

Stewart was soon able to resume his professional duties. In the following winter he again presented himself as Mr Stewart's substitute, and by a succession of eloquent lectures during several weeks, he so decidedly established his character, that when Mr Stewart signified a desire to have Dr Brown united with him in the professorship, but little opposition was made, and in 1810 he was appointed professor of moral philosophy in conjunction with Mr Stewart.

Immediately after his appointment he retired to the country, where he remained till within a few weeks of the meeting of the college; judging that, with a constitution not naturally strong, nothing was so important for his approaching labours as a confirmed state of health and spirits. For many years he had devoted his attention to the science of mind, and was intimately acquainted with the subject; and, from the experience of the two preceding winters, he had acquired sufficient confidence in his own powers to be assured that he could prepare his lectures upon the spur of the occasion. Accordingly, when the college opened, except the lectures that were written during Mr Stewart's absence, he had no other preparation in writing. His exertions during the whole of the winter were very great, and completely successful. The expectations that had been excited among his friends were more than realized, and he secured the highest place in the respect and affections of his students.

For some years after his appointment to the moral philosophy chair, Dr Brown had little leisure for engaging in any literary undertaking. Even the long summer vacation he found to be no more than sufficient for restoring his energies for the exertions of the succeeding season. By degrees, however, he became familiarised with the duties of his situation, and was enabled to indulge occasionally in other pursuits. In the summer of 1814 he brought to a conclusion his "Paradise of Coquettes," which he published anonymously, and which met with a favourable reception. In succeeding seasons he published various other poetical works.

Any notice of the life of Dr Brown would be incomplete if it did not contain a reference to his mother, whom he loved with a tenderness and reverence of affection that formed a distinguishing feature of his character. This excellent woman died in 1817. Her character is faithfully delineated in the beautiful lines addressed to her memory, prefixed to one of his poetical productions.

In the autumn of 1819, at a favourite retreat in the neighbourhood of Dunkeld, he commenced his text-book, a work which he long intended to prepare for the benefit of his students. At that time he was in excellent health; but towards the end of December of the same year he became indisposed, and after the recess he was in such a state of weakness as to be unable for some time to resume his official duties. When he again met his class his lecture unfortunately happened to be one which he was never able to deliver without being much moved, and from the manner in which he recited the very affecting lines from Beattie's Hermit, it was conceived by many that the emotion he displayed arose from a foreboding of his own approaching dissolution.

'Tis night, and the landscape is lovely no more,—
I mourn, but, ye woodlands, I mourn not for you,
For morn is approaching your charms to restore,
Perfumed with fresh fragrance, and glittering with dew;
Nor yet for the ravage of winter I mourn,
Kind nature the embryo blossom shall save;
But when shall spring visit the mouldering urn,
O when will it dawn on the night of the grave.

This was the last lecture he ever delivered.

From this period his health rapidly declined. Having upon a former occasion derived great benefit from a sea

voyage, he proceeded, by the advice of his medical attendants, to London, accompanied by his two sisters, with the intention of removing, as soon as the season allowed, to a milder climate. But all means of remedy were now too late, and nothing could permanently retard the progress of his disease. Day after day he became weaker.

During the whole period of his illness he was never heard to utter a complaint. Gentle as he ever was, sickness and pain made him still more so. His only anxiety seemed to be the distress which his sufferings occasioned to those around him. A few days after his arrival in London he went to Brompton, where he died on the 2d of April 1820. His remains were put into a leaden coffin, and laid, according to his own request, in the church-yard of his native parish, beside those of his father and mother.

Dr Brown was in height rather above the middle size. The expression of his countenance was that of calm reflection. His likeness is well preserved in a picture by Watson in 1806. Among the more prominent features of Dr Brown's character may be enumerated the most perfect gentleness, and kindness, and delicacy of mind, united with great independence of spirit, a truly British love of liberty, and a most ardent desire for the diffusion of knowledge, and virtue, and happiness among mankind. All his habits were simple, temperate, studious, and domestic; and he was remarkable for nothing more than his love of home, and the happiness he shed around him there.

As a philosopher he was possessed in an eminent degree of that comprehensive energy which, according to his own description, "sees, through a long train of thought, a distant conclusion, and separating at every stage the essential from the accessory circumstances, and gathering and combining analogies as it proceeds, arrives at length at a system of harmonious truth." The predominating quality of his intellectual character was unquestionably the power of analysis, in which he has had few equals. In all his prose Dr Brown has shown great powers of eloquence. His poetry has never been popular, though it contains many passages of exquisite beauty. As a writer, simplicity is the quality in which he is most deficient, and subtilty that in which he most excels.

His character as a philosopher will chiefly rest upon his lectures, which were published after his death. It would be foreign to the object of the present sketch to give an account of the principles of his philosophy, or to enter upon a discussion of any of the questions that have been agitated upon the subject. We shall merely observe that the estimation in which his lectures are held by the public appears from the number of editions which, under all the disadvantages of a posthumous publication, have been called for; and his virtues as a man are almost universally allowed to have been in beautiful accordance with his talents as a philosopher.

An account of the life and writings of Dr Brown was published in 1825, in 8vo, by the Rev. Dr Welsh. (w. w.)

BROWNE, SIR THOMAS, an eminent physician and celebrated writer, was born at London on the 19th of October 1605. Having studied at Winchester College, and afterwards at Oxford, he travelled through France and Italy; and returning by the way of Holland, he took his degree of doctor of physic at Leyden. In 1636 he settled at Norwich, and the year following was incorporated as doctor of physic at Oxford. His *Religio Medici* made a great noise; and being translated into Latin, instantly spread throughout Europe, and gained him a prodigious reputation. It was then translated into almost every language in Europe. This book has been heavily censured by some as tending to infidelity, and even atheism; whilst others, with much more reason, have applauded the piety, as well as the parts and learning, of the author. His Treatise on

Vulgar Errors was read with equal avidity; he also published *Hydriotaphia*, or a Discourse of Sepulchral Urns lately found in Norfolk. His reputation in his profession was equal to his fame for learning in other respects; and therefore the college of physicians were pleased to take him into their number as an honorary member; and King Charles II. coming to Norwich in his progress in 1671, was pleased to knight him, with singular marks of favour and respect. He died on his birthday in 1681, leaving several manuscripts behind him, which were published under the title of *The Posthumous Works of the learned Sir Thomas Browne, Knt. M.D.*

BROWNE, *Edward*, the son of the former, physician to King Charles II. and president of the Royal College of London. He was born in the year 1642; and studied at Cambridge, and afterwards at Merton College, Oxford. He then travelled; and on his return published a brief account of some travels in Hungary, Servia, Bulgaria, Macedonia, Thessaly, Austria, Styria, Carinthia, Carniola, Friuli, and other parts. He also published an account of several travels through great part of Germany, and joined his name to those of many other eminent men in a translation of Plutarch's Lives. He was acquainted with Hebrew, was a critic in Greek, and no man of his age wrote better Latin. High Dutch, Italian, French, and other modern languages, he spoke and wrote with as much ease as his mother tongue. King Charles said of him, that he was as learned as any of the college, and as well bred as any at court. He died on the 27th August 1708.

BROWNE, *William George*. This eminent traveller was born on Great-Tower-Hill, London, on the 25th July 1768. His father was a respectable wine merchant, descended from a good family in Cumberland. His constitution being originally so weak as to require constant attention, he was educated privately under Dr Whalley, editor of Ben Jonson's works, a man of considerable parts and learning, who inspired him with a taste for study. At seventeen he was sent to Oriel College, Oxford; and, though he complained of the want of encouragement and assistance, he there went through an extensive course of classical reading, studying often from twelve to fifteen hours a day. On leaving the university he hesitated for some time between the three learned professions; but at length determined to remain contented with the moderate competence left to him by his father, and applied himself entirely to the pursuit of knowledge. He embarked deeply in political questions, embracing with ardour the popular cause. He republished some political tracts, among which was part of Buchanan, *De Jure Regni apud Scotos*, and formed the plan of reprinting a regular series of such writings. But the fame of Mr Bruce's travels, and of the first discoveries made by the African Association, inflamed his ardent mind, and he determined to devote himself to the cause of discovery on that continent.

Mr Browne left England at the close of 1791, and arrived at Alexandria in January 1792. He spent a few months in visiting Siwah, the supposed site of the temple of Jupiter Ammon; and employed the remainder of the year in examining the whole of Egypt. In the spring of 1793 he visited Suez and Sinai, and in May set out for Darfur. This was his most important journey, in which he acquired a great variety of original information. He endured much hardship, and was unable to effect his purpose of returning by Abyssinia. He did not reach Egypt till 1796, after which he spent a year in Syria, and did not arrive in London till September 1798. In 1800 he published his travels in Africa, Egypt, and Syria, from the year 1792 to 1798, in one volume 4to. The work was highly esteemed, and is classed by Major Rennell among the first performances of the kind; but, from the

Brownists. abruptness and dryness of the style, it never became very popular.

In 1800 Mr Brown again left England, and spent three years in visiting Greece, some parts of Asia Minor, and Sicily. He had made some progress in preparing for the press an account of this journey, but gave up his intention, for some reason unknown.

Mr Browne now spent some years in retirement, employed in oriental studies, and showing indifference to British objects and scenery, though he enjoyed greatly an excursion into Ireland.

Tired of this inactivity, in 1812 he set out on a more extensive journey than formerly, proposing to penetrate to Samarcand, and survey the most interesting regions of Central Asia. He spent the winter in Smyrna, and in the spring of 1813 proceeded through Asia Minor and Armenia, made a short stay at Erzerum, and arrived on the first of June at Tabriz, where he met with Sir Gore Ouseley. About the end of the summer of 1813 he left Tabriz for Teheran, intending to proceed thence into Tartary; but unhappily he never reached that destination. Near the banks of the Kizil-Ozan his party were attacked by banditti, and, according to the report of the survivors, Mr Browne was dragged to a short distance from the road, where he was plundered and murdered. Suspicion attached to his companions, and even to the Persian government, but nothing occurred to confirm these surmises. Some bones, believed to be his, were afterwards found and interred near the grave of Thevenot, the celebrated French traveller.

Mr Browne, in his person, was thin, rather above the middle size, with a grave and pensive cast of countenance. He entertained an extraordinary predilection for the manners and character of the orientals. Like them, he was in general society silent, reserved, and even repulsive. Even among his most intimate friends he would remain long gloomy and reserved; but after indulging in a pipe his eye brightened, and he related with great animation the interesting scenes through which he had passed. His disposition was friendly, liberal, and generous, and he was distinguished by a strict regard to veracity. Under a cold exterior he cherished an ardent desire to distinguish himself by some memorable achievement, in pursuit of which he was ready to brave danger and death.

His volume of travels in Africa has already been mentioned. Mr Walpole, in the second volume of his *Memoirs* relating to European and Asiatic Turkey (4to, 1820), has published, from papers left by him, the account of his journey in 1802 through Asia Minor to Antioch and Cyprus; also Remarks written at Constantinople. No account is preserved of his last journey, except what is contained in a letter to Mr Smithson Tennant.

BROWNISTS, a religious sect, which sprung out of that of the Puritans towards the close of the sixteenth century. Their leader, Robert Brown, who wrote divers books in their behalf, was a man of good parts and some learning. He was born of a good family in Rutlandshire, and related to the lord-treasurer Burghley. He had been educated at Cambridge, but first published his notions, and began to inveigh openly against the discipline and ceremonies of the church, at Norwich in the year 1580; from which time he underwent divers prosecutions from the bishops, inso-much that he boasted he had been committed to no less than thirty-two prisons, in some of which he could not see his hand at noon-day. At length, with his congregation, he left the kingdom, and settled at Middleburg in Zealand, where they obtained leave of the states to worship God in their own way, and form a church according to their own model; which they had not long done before this handful of men, just delivered from the severities of

the bishops, began to differ among themselves, and crumble into so many parties, that Brown their pastor grew weary of his office; and, returning to England in 1589, he renounced his principles of separation, was preferred to the rectory of a church in Northamptonshire, and died, after leading a very idle and dissolute life, in 1630.

The revolt of Brown was attended with the dissolution of the church at Middleburg; but the seeds of Brownism which he had sown in England were so far from being destroyed, that Sir Walter Raleigh, in a speech in 1592, computes that no less than twenty thousand persons followed it. The occasion of their separation was not any fault they found with the faith, but only with the discipline and form of government of the other churches in England. They charged corruption equally on the Episcopal form and on that of the Presbyterians, by consistories, classes, and synods; nor would they join with any other reformed church, because they were not assured of the sanctity and regeneration of the members who composed it, on account of the toleration of sinners, with whom they maintained it an impiety to communicate. They condemned the solemn celebration of marriages in the church; maintaining that matrimony being a political contract, the confirmation of it ought to come from the civil magistrate. They would not allow to be baptized any children of such as were not members of the church, or of such as did not take sufficient care of those baptized before. They rejected all forms of prayer, and held that the Lord's prayer was not to be recited as a prayer, being only given for a rule or model whereon all our prayers are to be formed. The form of church government which they established was democratical. When a church was to be gathered, such as desired to be members of it made a confession and signed a covenant, by which they obliged themselves to walk together in the order of the gospel. The whole power of admitting and excluding members, with the decision of all controversies, was lodged in the brotherhood. The church officers were chosen from among themselves, for preaching the word and taking care of the poor, and separated to their several offices by fasting, prayer, and imposition of hands of some of the brethren. But they did not allow the priesthood to be any distinct order, or to give any indelible character. As the vote of the brotherhood made a man a minister, and gave him authority to preach the word and administer the sacraments among them, so the same power could discharge him from his office, and reduce him to the condition of a mere layman again. And as they maintained that the bounds of a church were defined by the number of those who could meet together in one place, and join in one communion, so the power of these officers was confined within the same limits. The minister or pastor of one church could not administer the Lord's supper to another, nor baptize the children of any but those of his own society. Any lay brother was allowed the liberty of prophesying, or of giving a word of exhortation to the people; and it was usual for some of them, after sermon, to ask questions, and reason upon the doctrines which had been preached. In a word, every church on the Brownists' model is a body corporate, having full power to do every thing which the good of the society requires, without being accountable to any presbytery, synod, assembly, convocation, or other jurisdiction whatever. Most of their discipline has been adopted by the Independents, a party which afterwards arose from among the Brownists. The laws were executed with great severity against the Brownists; their books were prohibited by Queen Elizabeth, their persons were imprisoned, and many of them were hanged. The ecclesiastical commission and the star-chamber, in fine, distressed them to such a degree that they resolved to quit their country. Accordingly, many families retired

ownrigg and settled at Amsterdam, where they formed a church, and chose Mr Johnson for their pastor, and after him Mr Ainsworth, author of the learned commentary on the Pentateuch. Their church flourished near a hundred years.

BROWNRIGG, Dr WILLIAM, was a native of Cumberland, and born about the year 1712. Of the early part of the life of this philosopher we have had no opportunity of obtaining information. Being destined for the medical profession, after the previous studies in his own country he repaired to Leyden to finish his education. This university was then in its highest splendour; Albinus taught anatomy, Euler mathematics, and the chair of medicine and chemistry was occupied by the accomplished Boerhaave. Having made a long and happy residence at Leyden, and taken his degree, he returned to his native country, and, in Whitehaven, married a lady of singular good sense, and possessed of an address so versatile and superior as never failed to charm in whatever circle it was exerted. He was the author of an inaugural dissertation *De Praxi medica ineunda*, 4to, Lugd. Bat. 1737; and of a treatise on the Art of making Common Salt, printed at London in 1748, in 8vo, which procured for him the addition of F. R. S.; a book now long out of print, but not out of recollection. He also published *An Enquiry concerning the Mineral Elastic Spirit contained in the Water of Spa in Germany*; and lastly, a treatise, published in 1771, *On the Means of Preventing the Communication of Pestilential Contagion*. A trip to the Spas of Germany suggested to him the idea of analyzing the properties of the Pyrmont springs, and of some others, and actually led him into that train of disquisition which terminated in the decomposition of one of our elements, and fixing its invisible fluid form in a palpable and visible substance. That Dr Brownrigg was the legitimate father of these discoveries was not only known at the time to his intimate and domestic circle, but also to the then president of the Royal Society, Sir John Pringle, who, when called upon to bestow upon Dr Priestley the gold medal for his paper of Discoveries of the Nature and Properties of Air, observed, that it was no disparagement to the learned Dr Priestley, that the vein of these discoveries was hit upon, and its course successfully followed up, some years ago, by his very learned, very penetrating, very industrious, but modest friend, Dr Brownrigg. To his seat at Ormethwaite, near Keswick, he had retired about twenty years before his death, withdrawing himself as much from the practice of physic as his numerous connections, his high character, and his friendly disposition, would permit, and purposing to divide his time and his taste between the romantic scenery of this delicious spot, and his researches in natural philosophy. In this retirement he died at the venerable age of eighty-eight, lamented by the poor, to whom he was uniformly a beneficent friend, and regretted by all.

BROWNIE, the name of a serviceable kind of sprite, who, according to a superstitious notion formerly prevalent in the Hebrides and Highlands of Scotland (as well as among the country people in England, where he had the name of *Robin Goodfellow*), was wont to clean the houses, help to churn, thresh the corn, and belabour all who pretended to make a jest of him. He was represented as stout and blooming, had fine long flowing hair, and went about with a wand in his hand. He was the very counterpart of Milton's *Lubber Fiend*.

BRUCE, ROBERT, son of the Earl of Carrick, and competitor with Baliol for the crown of Scotland, which he lost by the arbitration of Edward I. of England, for generously refusing to hold of him the crown of Scotland, which his ancestors had left him independent. But Baliol having afterwards broken his agreement with Edward, Bruce was

easily persuaded by that king to unite with him against Baliol, upon a promise that he would settle him on the throne. Having contributed much to the breaking up of Baliol's party, he demanded the accomplishment of King Edward's promise; but the latter is said to have given him this answer: "What! have I nothing else to do but to conquer kingdoms for you?" However, he recovered his crown, defeated the English in several battles, raised the glory of the Scots to an unexampled height of splendour, and extended their dominions. See SCOTLAND.

BRUCE, James, F. R. S. a celebrated traveller, was born at Kinnaird House in the county of Stirling, Scotland, on the 14th of December 1730. The Bruces of Kinnaird are a very ancient family, being descended from a younger son of Robert de Bruce; and they have been in possession of that estate for upwards of three centuries.

Mr Bruce was instructed in grammatical learning at the school of Harrow on the Hill, in Middlesex, where he acquired a considerable share of classical knowledge. Returning to Scotland, he applied to the study of the laws of his country; but soon contracting a dislike to this pursuit, he determined to push his fortune in the East Indies, and for that purpose went to London. While in the metropolis soliciting permission from the directors of the East India Company to go out and settle under their auspices as a free trader, he was introduced to a Miss Allan. This lady was the daughter of Mrs Allan, the widow of an opulent wine merchant. Her beauty and amiable temper soon gained the affections of Bruce; and on the proposal of a marriage, he was induced to forego his East India speculations, and take a share in the wine trade, which he did on marrying Miss Allan. She soon, however, fell into a bad state of health, and Bruce, in hopes that the genial climate of the south of France would benefit her, proceeded thither. But she died on the journey, within a year after her marriage.

Bruce returned to his business in London, but the bond which had connected him with it was now broken; and giving up the principal management of the concern to his partner, he applied himself to studies calculated to dispel the grief which had settled on his mind. For two years he laboured at the Spanish and Portuguese languages, which he learned to pronounce with great accuracy. He also assiduously practised several styles of drawing. His business having afforded him an opportunity of visiting the Continent, he proceeded thither, and travelled first through Portugal, and afterwards through Spain. In the latter country, the traces of oriental manners still visible, the desolate palaces of the caliphs, and the tales of chivalry, interwoven with the Moorish wars, awakened in his mind that spirit of romantic enterprise which afterwards led him to the fountains of the Nile. At Madrid he proposed to explore the collections of Arabic manuscripts which were buried in the monastery of St Lawrence, and in the library of the Escorial. But the jealousy of the Spaniards disappointing him in this, he proceeded to France, and afterwards to Holland, where the news of his father's death reaching him, he returned to England.

By the demise of his father he succeeded to an inheritance which, though respectable, was inadequate to the wants of his growing ambition. From the period of his return in 1758, to the year 1761, he intently employed himself in the acquisition of the eastern languages. A circumstance had occurred which introduced him to Mr Pitt. While at Ferrol in Galicia, there was a rumour of a war between Great Britain and Spain. It immediately occurred to the fertile mind of Bruce that a descent upon Spain at this point could scarcely fail of being successful. He boldly resolved to submit his project to Mr Pitt, through his friend Mr Wood, under secretary of state, to

Bruce.

whom he fully explained the circumstances on which he had formed his opinion. Mr Pitt sent for him, and after a conversation upon the subject, Bruce, at the minister's suggestion, drew up a memorandum of his project. He was then informed by Mr Wood, that Mr Pitt intended to employ him upon a particular service; that he might, however, go down and settle his affairs in his own country, but by all means to be ready upon a call. No time was lost on his part; but just after he received orders to return to London, Mr Pitt resigned.

Notwithstanding this disappointment, which he very sensibly felt, his hopes promised to be yet realized. The memorandum which he drew up for Mr Pitt had been laid before the king, and strongly recommended by Lord Halifax. The Earl of Egremont and Mr Greville had several meetings with Mr Bruce upon the subject, but the death of Egremont put an end to his expectations for the present. Lord Halifax, however, had appreciated Bruce's character. He proposed to him a journey to the coast of Barbary, which had as yet been but partially explored by Dr Shaw. The discovery of the source of the Nile also formed a subject of conversation; and it is unnecessary to state that the enterprising mind of Bruce eagerly caught up the idea.

"Fortune," says he, "seemed to enter into this scheme. At the very instant Mr Aspinwall, very cruelly and ignominiously treated by the dey of Algiers, had resigned his consulship, and Mr Ford, a merchant, formerly the dey's acquaintance, was named in his place. Mr Ford was appointed, and dying a few days after, the consulship became vacant. Lord Halifax pressed me to accept of this, as containing all sorts of conveniences for making the proposed expedition."

This favourable event determined him. After providing a large apparatus of instruments, he set out for Italy through France. On his arrival at Rome he was ordered to proceed to Naples, there to await his majesty's commands. From Naples he again returned to Rome, and from thence proceeded to Leghorn, where he at last embarked for Algiers, and arrived there on the 15th of March 1762.

"After a year spent at Algiers, constant conversation with the natives while abroad, and with my manuscripts within doors, had qualified me to appear in any part of the continent without the help of an interpreter. Ludolf had assured his readers that the knowledge of any oriental language would soon enable them to acquire the Ethiopic; and I needed only the same number of books to have made my knowledge of that language go hand in hand with my attainments in the Arabic. My immediate project of setting out on my journey to the inland parts of Africa had made me double my diligence; night and day there was no relaxation from these studies, although the acquiring any single language had never been with me either an object of time or difficulty."

At Algiers Mr Bruce was detained longer than he expected, in consequence of a dispute with the dey concerning Mediterranean passes. This being adjusted, he proceeded to Mahon, and from Mahon to Carthage. He next visited Tunis and Tripoli, and travelled over the interior parts of these states. At Bengazi, a small town on the Mediterranean, he suffered shipwreck, and with extreme difficulty saved his life, though with the loss of all his baggage. He afterwards sailed to the isles of Rhodes and Cyprus, and proceeding to Asia Minor, travelled through a considerable part of Syria and Palestine, visiting Hassia, Latakca, Aleppo, and Tripoli, near which last city he was again in imminent danger of perishing in a river. The ruins of Palmyra and Baalbec were next carefully surveyed and sketched by him; and his drawings of

these places are deposited in the king's library at Kew: "the most magnificent present in that line," to use his own words, "ever made by a subject to his sovereign." Mr Bruce published no particular account of these various journeys; but Dr Murray, in the second edition, introduced from Bruce's MSS. some account of his travels in Tunis.

In these various travels some years were passed; and Mr Bruce now prepared for the grand expedition, the accomplishment of which had ever been nearest his heart,—the discovery of the supposed sources of the Nile. In the prosecution of that dangerous object he left Sidon on the 15th of June 1768, and arrived at Alexandria on the 20th of that month. He proceeded from thence to Cairo, where he remained till the 12th of December following, when he embarked on the Nile, and sailed up the river as far as Syene, visiting in the course of the voyage the ruins of Thebes. Leaving Kennè on the Nile on the 16th February 1769, he crossed the desert of the Thebaid to Cosseir on the Red Sea, and arrived at Jidda on the 3d of May. In Arabia Felix he remained, not without making several excursions, till the 3d of September, when he sailed from Lohia, and arrived on the 19th at Masuah, where he was detained near two months by the treachery and avarice of the naybe of that place. It was not till the 15th of November that he was allowed to quit Arkeeko, near Masuah; and he arrived on the 15th of February 1770 at Gondar, the capital of Abyssinia, where he ingratiated himself with the most considerable persons of both sexes belonging to the court. Several months were employed in attendance on the king, and in an unsuccessful expedition round the lake of Dembea. Towards the end of October Mr Bruce set out for the sources of the Bahr el Azrek, which he supposed to be the principal branch of the Nile, though it is now generally agreed that this rank ought to be assigned to the Bahr el Abiad. At this long-desired spot he arrived on the 14th of November; and his feelings on the accomplishment of his wishes cannot be better expressed than in his own words:

"It is easier to guess than to describe the situation of my mind at that moment, standing in that spot which had baffled the genius, industry, and inquiry of ancients and moderns for the course of near three thousand years. Kings had attempted this discovery at the head of armies; and each expedition was distinguished from the last only by the difference of the numbers which had perished, and agreed alone in the disappointment which had uniformly and without exception followed them all. Fame, riches, and honour, had been held out for a series of ages to every individual of those myriads whom princes commanded, without having produced one man capable of gratifying the curiosity of his sovereign, or wiping off this stain upon the enterprise and abilities of mankind, or adding this desideratum for the encouragement of geography. Though a mere private Briton, I triumphed here in my own mind over kings and their armies; and every comparison was leading nearer and nearer to the presumption, when the place itself where I stood, the object of my vain-glory, suggested what depressed my short-lived triumphs. I was but a few minutes arrived at the source of the Nile, through numberless dangers and sufferings, the least of which would have overwhelmed me, but for the continual goodness and protection of Providence; I was, however, but then half through my journey, and all those dangers which I had already passed awaited me again on my return. I found a despondency gaining ground fast upon me, and blasting the crown of laurels I had too rashly woven for myself."

When he returned to rest on the night of that discovery, repose was sought for in vain. "Melancholy reflections

upon my present state, the doubtfulness of my return in safety, were I permitted to make the attempt, and the fears that even this would be refused, according to the rule observed in Abyssinia with all travellers who have once entered the kingdom; the consciousness of the pain that I was then occasioning to many worthy individuals, expecting daily that information concerning my situation which it was not in my power to give them; and some other thoughts, perhaps, still nearer the heart than those, crowded upon my mind, and forbade all approach of sleep.

"I was, at that very moment, in possession of what had for many years been the principal object of my ambition and wishes; indifference, which, from the usual infirmity of human nature, follows, at least for a time, complete enjoyment, had taken place of it. The marsh and the fountains, upon comparison with the rise of many of our rivers, became now a trifling object in my sight. I remembered that magnificent scene in my own native country, where the Tweed, Clyde, and Annan rise in one hill; three rivers, I now thought, not inferior to the Nile in beauty, preferable to it in the cultivation of those countries through which they flow; superior, vastly superior, to it in the virtues and qualities of the inhabitants, and in the beauty of the flocks, crowding its pastures in peace, without fear of violence from man or beast. I had seen the rise of the Rhine and Rhone, and the more magnificent sources of the Saone; I began, in my sorrow, to treat the inquiry about the source of the Nile as a violent effort of a distempered fancy. Grief and despondency now rolling upon me like a torrent, relaxed, not refreshed, by unquiet and imperfect sleep, I started from my bed in the utmost agony. I went to the door of my tent. Every thing was still; the Nile, at whose head I stood, was not capable either to promote or to interrupt my slumbers; but the coolness and serenity of the night braced my nerves, and chased away those phantoms that while in bed had oppressed and tormented me.

"It was true, that numerous dangers, hardships, and sorrows, had beset me through this half of my excursion; but it was still as true, that another guide, more powerful than my own courage, health, or understanding, if any of them can be called man's own, had uniformly protected me in all that tedious half. I found my confidence not abated, that still the same guide was able to conduct me to my wished-for home. I immediately resumed my former fortitude, considered the Nile as indeed no more than rising from springs as all other rivers do, but widely differing in this, that it was the palm for three thousand years held out to all the nations of the world as a *detur dignissimo*, which, in my cool hours, I had thought was worth the attempting at the risk of my life, which I had long either resolved to lose, or lay this discovery as a trophy, in which I could have no competitor, for the honour of my country, at the feet of my sovereign, whose servant I was."

The object of Mr Bruce's wishes being now gratified, he bent his thoughts on his return to his native country. He arrived at Gondar on the 19th November 1770, but found, after repeated solicitations, that it was by no means an easy task to obtain permission to quit Abyssinia. A civil war in the mean time breaking out, several engagements took place between the king's forces and the troops of the rebels, particularly three actions at a place called Serbraxos, on the 19th, 20th, and 23d of May 1771. In each of these Mr Bruce acted a considerable part, and for his valiant conduct in the second, received, as a reward from the king, a chain of gold. At Gondar, after these engagements, he again preferred the most earnest entreaties to be allowed to return home, entreaties which were long resisted; but his health at last giving away, from the anxiety of his mind, the king consented to his departure,

on condition of his engaging by oath to return to him in the event of his recovery, with as many of his kindred as he could engage to accompany him.

After a residence of nearly two years in that wretched country, Mr Bruce left Gondar on the 16th of December 1771, taking the dangerous way of the desert of Nubia, instead of the more easy road of Masuah, by which he entered Abyssinia. He was induced to take this route, from his former experience of the cruel and savage temper of the naybe of Masuah. Arriving at Teawa on the 21st March 1772, Mr Bruce had the misfortune to find the sheikh Fidele at Atbara, the counterpart of the naybe of Masuah in every bad quality. By his intrepidity and prudence, however, he obtained permission to depart next day, and he arrived at Sennaar on the 29th of the same month.

Mr Bruce was detained upwards of four months at that miserable and inhospitable place, the inhabitants of which he thus describes: "War and treason seem to be the only employment of these horrid people, whom Heaven has separated by almost impassable deserts from the rest of mankind, confining them to an accursed spot, seemingly to give them an earnest in time of the only other state worse which he has reserved to them for an eternal hereafter." This delay was occasioned by the villany of those who had undertaken to supply him with money; but at last, by disposing of nearly the whole of his gold chain, the well-earned trophy of Serbraxos, he was enabled to make preparations for his dangerous journey through the deserts of Nubia.

He left Sennaar on the 5th of September, and arrived on the 3d of October at Chendi, which he quitted on the 20th, and travelled through the desert of Gooz, reaching the village of that name on the 26th of October. On the 9th of November he left Gooz, and entered upon the most dreadful and dangerous part of his journey. All his camels having perished, Mr Bruce was under the necessity of abandoning his baggage in the desert, and with the greatest difficulty reached Assouan upon the Nile on the 29th of November. After some days' rest, having procured fresh camels, he returned into the desert, and recovered his baggage, among which was a quadrant of three feet radius, supplied by Louis XV. from the military academy at Marseilles.

On the 10th of January 1773, after more than four years' absence, he arrived at Cairo, where, by his manly and generous behaviour, he so won the heart of Mahomet Bey, that he obtained a firman, permitting the commanders of English vessels belonging to Bombay and Bengal to bring their ships and merchandise to Suez, a place far preferable in all respects to Jidda, to which they were formerly confined. Of this permission, which no European nation could ever before acquire, many English vessels have since availed themselves; and it has proved peculiarly useful both in public and private dispatches. Such was the conclusion of his laborious and memorable journey through the desert.

At Cairo Mr Bruce's earthly career had nearly been concluded by a disorder in his leg, occasioned by a worm in the flesh. This accident kept him five weeks in extreme agony, and his health was not re-established till a twelvemonth afterwards, at the baths of Porretta in Italy. On his return to Europe Mr Bruce was received with all the admiration due to his enterprising character. After passing a considerable time in France, particularly at Montbard, with his friend the Comte de Buffon, by whom he was received with much hospitality, and is mentioned with great applause, he at last revisited his native country, from which he had been upwards of twelve years absent.

It was now expected that he would take the earliest

Bruce. opportunity of giving to the world a narrative of his travels, in which the public curiosity could not but be deeply interested. But several circumstances contributed to delay the publication. "My friends at home," says he, "gave me up for dead; and as my death must have happened in circumstances difficult to have been proved, my property became as it were a *hereditas jacens*, without an owner, abandoned in common to those whose original title extended no further than temporary possession. A number of law-suits were the inevitable consequence of this upon my return. To these disagreeable avocations, which took up much time, were added others still more unfortunate. The relentless ague, caught at Bengazi, maintained its ground, at times, for a space of more than sixteen years, though every remedy had been used, but in vain; and what was worst of all, a lingering distemper had seriously threatened the life of a most near relation (his second wife), which, after nine years constant alarm, where every duty bound me to attention and attendance, conducted her at last, in very early life, to her grave." Amidst the anxiety and the distress thus occasioned, Mr Bruce was by no means neglectful of his private affairs. He considerably improved his landed property, inclosing and cultivating the waste grounds; and he highly embellished his paternal seat.

The termination of some law-suits, and of other business, which had occupied much of his time, having at length afforded leisure to Mr Bruce to put his materials in order, his long-expected work made its appearance in 1790, seventeen years after his return to Europe. It consisted of five large quarto volumes, embellished with plates and charts; was dedicated to the king, and introduced by a striking and manly preface. It is unnecessary to enter into any criticism or analysis of this celebrated work. It is universally allowed to be replete with curious and useful information, and to abound in narratives which at once excite our admiration and interest our feelings. The very singular and extraordinary picture which it gives of Abyssinian manners startled the belief of some. One fact in particular which he stated shipwrecked his reputation, and the world of literature from Johnson down to the author of Munchausen ridiculed the statement as unworthy of credit. It was, that the Abyssinians were in the practice of eating raw meat cut out of a living cow. This, though believed in France and other continental countries, was treated as a fable in England. The shafts of ridicule, envy, and malice, were levelled at his devoted head. The great moralist himself went so far as to doubt his ever having been in the country at all. This was too much for a spirit like that of Bruce, proud, and conscious of its own integrity. He had braved the simoom in the burning sands of Nubia; he had perseverance and strength of mind enough to achieve a triumph which had baffled the efforts of mankind for three thousand years; but all that he received at the hands of his contemporaries was obloquy and contempt. Posterity, however, has done him justice. Every succeeding traveller who has visited the country bears testimony to his veracity, and shows that he has in an eminent degree kept faith with his honour and his fame. The most startling statements, in particular, which he made, have since been fully verified. (See *ABYSSINIA*, vol. ii. p. 61 of this work.) There are indeed a few errors in dates and other circumstances, but they are of no great moment, and in no degree deduct from the general authenticity of his travels.

The language of the work is in general harsh and unpolished, though sometimes animated. Too great a display of vanity runs through the whole; and the apparent facility with which the traveller gained the most familiar access to the courts, and even to the harems, of the sove-

reigns of the countries through which he passed, is apt to create in readers some doubts of the accuracy of the narration. Yet there appears upon the whole such an air of manly veracity, and circumstances are mentioned with a minuteness so unlike deceit, that these doubts are overcome by the general impression of truth which the whole detail irresistibly fastens upon the mind. The first impression being almost wholly disposed of within a short time, Bruce had stipulated for a second edition, which was preparing for the press when death removed the author from this transitory stage.

This event happened on the 26th of April 1794. In the evening of that day, when some company were departing, Bruce attended them down stairs; but on the steps his foot slipped, and he fell down headlong. He was taken up speechless, and remained in a state of insensibility for eight or nine hours, when he expired on the 27th of April 1794, in the sixty-fifth year of his age. He married, for his second wife, at Carronhall, on the 20th May 1776, Mary, eldest daughter of Thomas Dundas of Fingask. Mrs Bruce died in 1784, after a long and lingering indisposition, during which she was attended with the most affectionate assiduity by her husband. By this marriage Mr Bruce had two sons and one daughter.

The second edition of these travels was published in 1805, in seven vols. 8vo, with a quarto volume of plates, edited by Dr Alexander Murray, who obtained access to all his papers, and illustrated the work with a learning and research which established his fame as an oriental scholar. A third edition was published in 1813, which, we believe, is now out of print.

There never, perhaps, existed a man better qualified for the hazardous enterprise he undertook, than Bruce. His person was of the largest size, his height exceeding six feet, and the bulk as well as the strength of his body being proportionally great. He excelled in all personal accomplishments, being a hardy, practised, and indefatigable swimmer, trained to exercise and fatigue of every kind, while his long residence among the Arabs had given him a more than ordinary facility in managing the horse. In the use of fire-arms he was so unerring, that in innumerable instances he never failed to hit the mark; and his dexterity in handling the spear and lance on horseback was also uncommonly great. He was master of most languages, understanding the Greek perfectly; and he was so well skilled in oriental literature, that he revised the New Testament in the Ethiopic, Samaritan, Hebrew, and Syriac, making many useful notes and remarks on difficult passages. He had applied from early youth to mathematics, drawing, and astronomy, and had acquired some knowledge of physic and surgery. His memory was astonishingly retentive, and his judgment sound and vigorous. He was dexterous in negotiation, a master of public business, animated with the warmest zeal for the glory of his king and country, a physician in the camp or city, a soldier and horseman in the field; whilst, at the same time, his breast was a stranger to fear, though he took every precaution to avoid danger. Such, at least, is his own representation of his character; and though an impartial judge would probably make considerable abatement for the natural bias of a man drawing his own portrait, yet it cannot be denied, that in personal accomplishments Bruce equalled, if he did not excel, most of his contemporaries; that he was distinguished for vigour of understanding, as well as great literary attainments; and that in active and persevering intrepidity he may be classed with the most eminent characters in any age or country. Thus accomplished, Bruce could not but be eminently fitted for an attempt so full of difficulty and danger as that of penetrating into the heart of Abyssinia; and no one who peruses his account

of the expedition can fail to pay an unfeigned tribute of admiration to his intrepidity, manliness, and uncommon dexterity in extricating himself out of situations the most dangerous and alarming, in the course of his long and hazardous journey. Not to mention his conduct during his residence in Abyssinia, his behaviour at Masuah, Teawa, and Sennaar, evinces the uncommon vigour of his mind; but it was chiefly during his passage through the Nubian desert that his fortitude, courage, and prudence, appeared to the greatest advantage. Of his learning and sagacity, his delineation of the course of Solomon's fleet from Tarshish to Ophir, his account of the cause of the inundations of the Nile, and his comprehensive view of the Abyssinian history, afford ample proofs. He expresses throughout all his works a deep and lively sense of the care of a superintending Providence, without whose influence he was convinced of the futility of all human ability and foresight to preserve from danger. He appears to have been a serious believer of the truth of Christianity; and his illustrations of some parts of the sacred writings are original and valuable.

BRUCHSAL, a bailiwick in the grand duchy of Baden, on the Bergstrassa, near the Rhine, containing, besides the city from which it takes its name, one city, nine villages, and 15,400 inhabitants. The city is on the Salzbach, which soon joins the Rhine, in a beautiful situation, surrounded by vineyards and gardens. It contains 5690 industrious inhabitants, occupied in various manufactures.

BRUCK, a circle in the Austrian province of Steyermark, extending over 1496 square miles, or 917,440 acres. It is situated in a mountainous district, with valleys between the ranges, of moderate fertility. In 1817 it contained 62,538 inhabitants. The chief place, of the same name, at the junction of the river Mur with the Murz, contains about 2000 inhabitants.

BRUCKENAU, a city of 1550 inhabitants, the capital of a magistracy of the same name, in the circle of the Lower Maine, and kingdom of Bavaria. It extends over a hundred and nine square miles, and contains, besides the city, twenty-two villages, with 9350 inhabitants. It is a poor district, yielding little corn, but abundance of potatoes. The chief employment of the inhabitants consists in making wood ware, especially platters and bowls, and some spinning and weaving flax.

BRÜCKER, JAMES, theologian, historian, philologist, and biographer, was born at Augsburg on the 22d of January 1696. His father, who was a respectable burgher, destined him for the church; and his own inclinations according with his father's wishes, he was sent, at the usual age, to pursue his studies in the university of Jena. Here he took the degree of master of arts in 1718; and in the following year he published his *Tentamen Introductionis in Historiam doctrinæ de Ideis*, in 4to; a work which, having afterwards amplified and completed, he republished under the title of *Historia Philosophica doctrinæ de Ideis*, at Augsburg in 1723. He returned to his native city in 1720; but here his merit having attracted envy rather than recompense, he was induced to accept of the office of parish minister of Kaufbevern in 1723. In the same year he published a memoir *De Vita et Scriptis Cl. Ettingeri*, Augs. 8vo. His reputation having been at length established by these learned works, in 1731 he was elected a member of the Academy of Sciences at Berlin, and soon afterwards he was invited to Augsburg to fill the honourable situation of pastor and senior minister of the church of St Ulric. He published in the same year three dissertations relating to the history of philosophy, under the title of *Otium Kindelicum, sive Meletematum Historico-philosophicorum tria*, Augsburg, 1731, 8vo. Be-

sides several smaller dissertations on biography and literary history, printed at different times, and which he afterwards collected in his *Miscellanea*, he published at Ulm, in 1737, *Neue Zusätze verschiedner Vermehrungen, &c. zu den kurtzen Fragen aus der Philosophischen historie*, 7 vols. 12mo. This work, being a history of philosophy in question and answer, contains many details, especially in the department of literary history, which he has chosen to omit in his greater work on the same subject. He was forced by the booksellers, in opposition to his own opinion, to adopt the erotematic method, which at that time had been rendered popular by the writings of Hubner and Rambach.

In 1741, at Leipsic, appeared the first volume of his great work, *Historia Critica Philosophiæ, a mundi incunabulis ad nostram usque ætatem deducta*. Four other ponderous quartos, completing the first edition of this elaborate history, followed in 1744. Such was the success of this publication, that the first impression, consisting of four thousand copies, was exhausted in twenty-three years, when a new and more perfect edition, the consummation of the labours of half a century devoted to the history of philosophy, was in 1767 given to the world in six volumes quarto. The sixth volume, consisting entirely of supplement and corrections, is applicable to the first as well as to the second edition. Of the merits of this work we shall speak in the sequel.

His attention, however, was not wholly occupied by this stupendous undertaking. The following books would of themselves have been sufficient to exhaust the industry of any ordinary author:—*Pinacotheca Scriptorum nostra ætate literis illustrium*, &c. Augsburg, 1741–55, folio, in five decads. *Ehren Tempel der Deutschen Gelehrsamkeit in welschen die Bildnisse gelehrter Maenner unter den Deutschen aus dem XV. XVI. und XVII. Jahrhundert aufgestellt, und ihre Geschichte, &c. outworfen sind*, Augsburg, 1747–49, 4to, five decads. *Institutiones Historiæ Philosophicæ*, Leipsic, 1747, 8vo, a second edition, *ibid.* 1756; and a third has been published since Brucker's death, with a continuation by Professor Born of Leipsic, in 1790. *Miscellanea Historiæ Philosophicæ Literariæ criticæ olim sparsim edita nunc uno fasce collecta*, Augsburg, 1748, 8vo. *Erste Anfangsgrunde der Philosophischen Geschichte, als ein Auszug seiner grossern Werke, Zweyte, Ausgabe*, Ulm, 1751, 8vo. He likewise superintended and corrected an edition of Luther's translation of the Old and New Testament, with a Commentary extracted from the writings of the English theologians, Leipsic, 1758–70, folio, six parts. His death ensued before this work was finished, which has since been accomplished by Teller. He died at Augsburg in 1770; and he may be added to the catalogue of Huetius, to prove that literary labour is not incompatible with sound health and longevity. (See *Saxii Onomasticon*; *Biographie Universelle*; Gesner's *Isagoge*.)

It is only by his writings on the history of philosophy that Brucker is now known in the literature of Europe. In this study his great work forms an important era, and even at the present day it is the most extensive and elaborate upon the subject. It is, however, a work of which the defects are great, and its errors have been important in their consequences, in proportion to the authority it has acquired. We shall, therefore, hazard a few general observations on the defects which chiefly detract from the perfection and utility of the *Critical History of Philosophy*.

If Brucker had carried into this study a penetration equal to his diligence, and had his general comprehension of the scope and nature of the subject corresponded with the elaborate minuteness of his details, he would

Brucker. have left us a work which might have had some pretensions to be considered as a rational history of human opinion. He lived, however, at a period when these different qualities were only beginning to be conjoined, and when as yet the history of philosophy had been written merely as a chronicle of the passing theories of individuals and sects. To give to the science of history a regular and connected form, and to arrange the narrative of successive events, and still more of successive opinions, according to the relation they bear to principles of established influence, was an attempt of which few in that age had any conception, and of which Brucker certainly had none. In civil history it was then believed that the historian had fulfilled all the duties of his office if he strung together the events which were known or believed to have occurred, in good language, and garnished them occasionally by a few general reflections on the absolute motives of human action. A very different notion is now held of the functions of the historian. He who at present attempts to write the history of any country, must reflect, before he begins, what were the chief occurrences in that history, and what were the revolutions which the manners and constitution of that particular nation have undergone. He must bear with him, from the commencement to the conclusion of his labours, a constant impression that every occurrence should be more or less considered, not only as it took place, and as it bore an influence on contemporary affairs, but as it may have remotely contributed to the events, and the opinions, and the character of succeeding times. But if this be true in regard to the histories of particular nations, it is evident that, by how much the traces of opinions are more light and evanescent than those of events,—by how much the speculations of philosophers whose writings have either perished or come down to us mutilated and obscure, are more difficult to be appreciated in their causes, and connections, and consequences, than the actions of warriors and statesmen,—by so much the more is it necessary in philosophical than in civil history to combine reasoning with erudition, and to substitute the researches of the philosopher for the details of the chronicler. History and philosophy are two different things; and he who would write the history of philosophy must excel in both. Bacon had long ago required this union, and had pointed out the manner in which the historian of literature should endeavour to establish those principles of connection which constitute the soul and charm of such a history; how, by detecting the union of effects and causes, he might be enabled to determine the circumstances favourable or adverse to the sciences; and how, in short, by a species of enchantment he might evoke the literary genius of each different age. The fulfilment of this plan was, however, far beyond the capacity of Brucker, and was an undertaking of which he had even no conception. Better qualified by nature and education for amassing than arranging materials, he devoted his principal attention to a confused compilation of facts, leaving to others their application, the discovery of their mutual connections, and the formation of the scattered fragments into a whole.

The merit of his great work consists entirely in the ample collection of materials. The reader who would extract any rational view of the progress of opinion must peruse it with a perpetual commentary of his own thoughts. He will find no assistance from his author in forming any general views, or in tracing the mutual dependencies of the different parts of the subject. Brucker has discovered the fountains of history, but he has made us drink of them without purifying the draught. Even in this respect his merit has been greatly overrated. Vast as is the body of materials which he has collected, we are always miss-

ing those very things which we might reasonably have expected would have been the first objects of a rational inquirer, and we are continually disappointed of the information we are most anxious to acquire. The idle and slavish attention which he has bestowed on previous compilers, has frequently diverted him from the study of the original authors themselves. Quoting the passages of the ancients from others, or trusting, perhaps, to the reference of an index, he has frequently overlooked those very testimonies which could have given us the most authentic knowledge of the opinions or characters of ages and individuals. He has often presented the authorities he has adduced, mutilated or misapplied; and this either from not having sufficiently studied these passages in their general connection with the system they illustrate, or from having been unable to withdraw them from the obscurity in which they were involved. He has shown no critical sagacity in distinguishing the spurious from the authentic, or in balancing the comparative weight of his authorities. He has frequently transcribed where he ought to have explained the words of the original authors; and without taking into account the different value of the same term in different nations and ages, he has left us to apply a doubtful or erroneous meaning to words which might have been easily rendered by other expressions, and to suppose a distinction in the sense where there only existed a difference in the language. The glaring errors, even, which occasionally occur in his expositions of the Grecian philosophy, while they are inconsistent with any critical knowledge of the tongue, would make us suspect that he was in the habit of relying on the treacherous aid of translations. In short, if we knew nothing more of the ancient philosophers than what we acquire from Brucker, we should be often obliged to attribute to them opinions so obscure, or so absurd, that we must either believe ourselves wrong in the interpretation, or be unable to comprehend the cause of all the admiration and reverence they have received.

He has discovered little skill in his analysis of the different systems of philosophy; and the confusion of what is essential and principal with what is accidental and subordinate clearly evinces that these abridgments were thrown together while acquiring, in detail, a knowledge expressly for the purpose, instead of being the consummation of a long and familiar meditation on the subjects in all their modifications and dependencies. He has dwelt with the most irksome minuteness on every unimportant and doubtful circumstance in the lives of the philosophers; but he has too often overlooked the particular and general causes that produced an influence on the destinies of their philosophy. The aphoristic method which he has adopted prevents him from following a consecutive argument throughout its various windings. The most convincing reasoning in his hands loses much of its demonstration and beauty; and every ingenious paradox comes forth from his alembic a mere *caput mortuum*,—a residue from which every finer principle has been expelled. Where the genius of the philosopher is discovered more in the exposition and defence than in the original selection and intrinsic stability of his tenets, Brucker has not found the art of doing justice both to the philosopher and his opinions, or of conveying to the reader any conception of the general value of the original. This last defect, it must, however, be acknowledged, is more or less inseparable from every abstract of opinions, where it is always necessary to separate in some degree what is essential to the subject from what is peculiar to the man. He has relieved the sterility of his analysis by none of the elegancies of which the subject was susceptible. Without any pretension to purity, his diction is defective even in

cker. precision; and his sentences, at all times void of harmony and grace, are abrupt, and often intricate in their structure.

The person, therefore, who would attempt to write a history of philosophy without the imperfections of that of Brucker, must draw from obscurity many important facts hitherto omitted; he must arrange and combine these in a more perspicuous order; and, above all, he must review the opinions he shall thus relate and methodise with a more accurate criticism. He ought not to write of Peripatetics like a disciple of Aristotle, of Platonists like a pupil of Proclus, nor of the doctrines of the Porch like a follower of Zeno. Still less must he compare the tenets of one sect by the principles of another; or endeavour to estimate doctrines, dubious in themselves, by reference to a standard equally arbitrary and contingent. He must place himself, to use the language of Lucretius, upon the highest pinnacle of the temple of science, from which he may look calmly back, and compare and study the doctrines of all these departed sages, without being himself involved in the partialities of particular sects or opinions,—

Despicere unde queat alios, passimque videre
Errare, atque viam palanteis quærere veri.

He must honour the genius of all alike, and believe that all are deserving of commendation, although all are more or less subject to error. He ought, in short, to be a philosopher superior even to the prejudices of philosophy.

If we take a survey of what has been attempted since the death of Brucker in accomplishing a more perfect history of philosophy, we shall find that more has been done in illustrating the philosophical tenets of particular sects, or the progress of particular portions of science, than in giving a comprehensive view of the general history of thought. In France, in Italy, and in our own country, those who have laboured in this department, far from being able to correct the errors of Brucker, have, in general, through defect of erudition, been wholly indebted to his industry for their materials, and have been content to rely on his accuracy with more than Pythagorean faith. If we except some ingenious speculations, which are more of the nature of philosophical essays on the history of philosophy, and which endeavour rather to illustrate the general spirit than to detail the particular opinions of the philosophers, there is nothing valuable on this subject to be found in the literature of these countries. Among the learned of his own country Brucker has never enjoyed a very distinguished reputation; and the Germans, while they were the most capable of discovering his defects, have had the honour of most sedulously and successfully endeavouring to supply them. We are indebted to them especially for many valuable treatises on the history of particular portions of philosophy, in which we find at length a profound reasoning united to an extensive and original erudition. The works of Meiners, Fulleborn, Tiedmann, and perhaps Buhle, deserve especially to be distinguished. An undertaking, however, which, from the extent of its plan, as well as the ability of its execution, claims particular notice, is the *History of Philosophy*, by Professor Tenneman of Jena. This work, as far as it is completed, affords us the most accurate, the most minute, and the most rational view we yet possess of the different systems of philosophy, in their intrinsic and relative bearings. The author has not only given us a minute analysis of each system, the result of a profound and familiar study of the original philosopher, but he has also displayed to us his philosophy, divested of its peculiarities, and compared with others by a general and impartial review. The main defect of this work, at least in reference to readers not German, is, that, like Buhle and the other disciples of Kant, he has taken the criti-

cal philosophy as the vantage-ground from which to make his survey of all former systems. Thus the continual reference to the peculiar doctrines of the school of Kant, and the adoption of its language, render it frequently impossible for those who have not studied the dark works of this modern Heraclitus to understand the strictures of Tenneman on the systems even of Aristotle or Plato. (v.v.)

BRUGES, a city, the capital of the province of East Flanders, and of the circle, containing seven cantons and seventy-six communes, to which it gives the same name, in the Netherlands. At one period it was the greatest commercial city in Europe; and though, from political events, its importance has been reduced, the remains of its ancient wealth are visible in the houses and public buildings. It stands on the canal which passes from Ghent to the sea at Ostend, and which is navigable for large flat-bottomed barks. It is still a manufacturing city of considerable industry, producing a variety of goods in linen, woollen, and silk, and furnishing many articles, chiefly for home consumption. The land around it is brought to the highest possible state of cultivation, and furnishes ample stores of necessaries to the dense population. The churches, especially that of Notre Dame, are objects of curiosity to all visitors, as well as the Gothic town-house and the hall of justice. The inhabitants are about 35,000. Long. 3. 7. 47. E. Lat. 51. 12. 40. N.

BRUIN, JOHN DE, professor of natural philosophy and mathematics at Utrecht, was born at Gorcum in 1620. He had uncommon skill in dissecting animals, and was a great lover of experiments. He also made observations in astronomy. He published dissertations *De vi altrice*; *De corporum gravitate et levitate*; *De cognitione Dei naturali*; *De lucis causa et origine*, &c. He had a dispute with Isaac Vossius, to whom he wrote a letter, printed at Amsterdam in 1693, wherein he criticises Vossius's book *De Natura et Proprietate Lucis*, and strenuously maintains the hypothesis of Descartes. He died in 1675, after he had been professor twenty-three years; and his funeral oration was pronounced four days after by M. Grævis.

BRUMALIA, in *Roman Antiquity*, festivals of Bacchus, celebrated twice a year, the first on the 12th of the kalends of March, and the other on the 18th of the kalends of November. They were instituted by Romulus, who, during these feasts, used to entertain the senate. Among the heathen festivals which the primitive Christians were much inclined to observe, Tertullian mentions the *brumæ* or *brumalia*.

BRUMOY, PETER, a learned Jesuit, born at Rouen in 1668, distinguished himself in his youth by his talents for the belles lettres; and during his whole life was beloved for his probity, his virtue, and the goodness of his heart. He wrote many works, the most considerable of which is his *Theatre of the Greeks*. He died at Paris in 1742.

BRUN, CHARLES LE, was descended of a family of distinction in Scotland, and born in the year 1619. His father was a statuary by profession. He discovered, it is said, such an early inclination for painting, that at three years of age he used to take coals, and design on the hearths and sides of the chimney, only by the light of the fire; and at twelve he drew the picture of his uncle so well that it still passes for a fine piece. His father being employed in the gardens at Sequier, and having brought his son along with him, the chancellor of that name took a liking to him, and placed him with Simon Vouet, an eminent painter. He was afterwards sent to Fountainbleau to copy some of Raphael's pieces. The chancellor sent him next to Italy, and supported him there for six years. Le Brun, in his return, met with the celebrated Poussin, by whose conversation he greatly improved himself in his art, and contracted a friendship with him which terminated

Bruges
||
Brun.

Brunn
||
Bruno.

only with their lives. A painting of St Stephen, which he finished in 1651, raised his reputation to the highest pitch. Soon after this, the king, upon the representation of M. Colbert, made him his first painter, and conferred on him the order of St Michael. His majesty employed two hours every day to see him work while he was painting the family of Darius at Fontainebleau. About the year 1662 he began his five large pieces of the history of Alexander the Great, in which he is said to have set the actions of that famous conqueror in a more glorious light than Quintus Curtius has done in his history. He procured several advantages for the royal academy of painting and sculpture at Paris, and formed the plan of another for the students of his own nation at Rome. There was scarcely any thing done for the advancement of the fine arts in which he was not consulted. It was through the interest of M. Colbert that the king gave him the direction of all his works, particularly of his royal manufactory at the Gobelins, where he had a handsome house with a genteel salary assigned to him. He was also made director and chancellor of the royal academy, and showed the greatest desire to encourage the fine arts in France. He was endowed with a vast inventive genius, which extended itself to arts of every kind; and he was well acquainted with the manners and history of all nations. Besides his extraordinary talents, his manners were so polished, and his address so pleasing, that he attracted the regard and affection of the whole court of France, where, by the places and pensions conferred on him by the king's liberality, he made a very considerable figure. Le Brun was the author of two treatises, one on physiognomy, and the other on the different characters of the passions. He died at Paris in 1690.

BRUNDUSIUM, or BRUNDISIUM. See BRINDISI.

BRUNN, a circle in the Austrian province of Moravia, extending over 1815 square miles, or 1,116,600 acres. It comprehends thirteen cities, with their respective suburbs, fifty-six market-towns, 649 villages, and 52,143 houses. The inhabitants amounted in the year 1823 to 354,175. The northern part of the circle is a portion of the Moravian mountain range, which yields abundant mineral riches. Between the mountains the land is highly productive in corn and cattle. It is the chief manufacturing district of the imperial dominions, and produces good woollen, linen, and cotton goods of all descriptions. The city of Brunn is the capital of the circle of that name, as well as of the province of Moravia. It stands at the junction of the river Zwittawa with the Schwartza. It is fortified, but in too weak and ancient a way to be now defensible, and the citadel, from neglect, is falling to decay. The situation is very picturesque, and the buildings are magnificent, but the streets rather narrow. It is on the whole the most pleasing city in the Austrian dominions. Its trade is very extensive. Its manufactures are chiefly fine woollen and linen goods; it is also the principal mart for the exchange of the commodities of the south and north of Europe, and is benefited by the excellent roads through it to Vienna and Italy on the one hand, and to Poland, Prussia, and Saxony on the other. The increase of inhabitants has been rapid. In the year 1814 they were 25,760, and in the year 1827 they amounted to 33,350. Long. 16. 30. E. Lat. 49. 11. 32. N.

BRUNO, JORDANO, was born at Nola, in the kingdom of Naples, and about the year 1582 began to call in question some of the tenets of the Romish church, which occasioned his retiring to Geneva; but after two years stay there he expressed his aversion to Calvinism in such a manner that he was expelled the city. After having staid some time at Lyons, Toulouse, and Paris, he came to London, and continued two years in the house of M. Castle-

nau, the French ambassador. He was very well received by Queen Elizabeth and the politer part of the court. His principal friends were Sir Philip Sidney and Sir Fulk Greville. With these and some others of their club Bruno held assemblies; but as they treated of subjects of a very delicate nature, which could not suit the taste or capacity of every body, they kept the door always shut, and none but select persons were admitted into their company. At Sir Philip's request he composed his *Spaccio della Bestia Trionfante*, which was printed in 8vo, 1584, and dedicated to that gentleman. From England he went to Wittenberg, and thence to Prague, where he printed several tracts, in which he openly avowed atheistical principles. After visiting some other towns in Germany, he made a tour to Venice, where he was apprehended by order of the inquisition, tried, condemned, and, refusing to retract, burnt at the stake on the 9th February 1600.

BRUNSWICK, DUCHY OF. See GERMANY.

BRUNSWICK, a city, the capital of the duchy of the same name, in Germany. It is situated on the small navigable river Oker, which joins the Aller, and then falls into the Weser. It is an open place, the fortifications having been demolished and converted into public walks. It is a well-built city, on a fruitful plain. The palace, in the ancient German style, is large, inelegant, and inconvenient. There are eleven churches, of which nine, including the cathedral, are allotted to the Lutheran worship, and one each to the Catholics and the Reformed. The number of inhabitants in 1827 was 36,200. These find employment partly in the trades and professions arising from the seat of government, partly from the trade created by the great fairs annually held, but chiefly from manufactures of almost every kind of commodity, the principal of which is perhaps that of brewing beer and vinegar, and the distillation of corn. There are several cabinets, museums, libraries, and collections of pictures belonging to or under the patronage of the duke. Long. 10. 26. 22. E. Lat. 52. 15. 35. N.

BRUNSWICK, a post-town of Maine, in Cumberland county, United States. It is situated on the south-west side of the Androscoggin, and contains 2931 inhabitants. Long. 69. 55. W. Lat. 43. 53. N.

BRUNTISLAND. See BURNTISLAND.

BRUSH, an assemblage of hairs and hogs' bristles, fastened in the holes of a wooden handle or board, pierced for that purpose, and serving to cleanse divers bodies by rubbing therewith. The manner of making brushes is by folding the hair or bristle in two, bringing it by means of a packthread, which is engaged in the fold, through the holes with which the wood is pierced all over, and afterwards fastening it therein with glue. When the holes are thus filled, the ends of the hair are cut to make the surface even.

Shearmen's BRUSH is made of wild boars' bristles, and serves to lay the wool or nap of cloth, after shearing it for the last time.

BRUSH, among painters, a larger and coarser kind of pencil, made of hogs' bristles, wherewith to lay the colours on their large pieces. The Chinese painter's brush consists of the stalk of a plant, whose fibres being fretted at both ends, and tied again, serve for a brush.

BRUSSELS, a city, one of the capitals of the kingdom of the Netherlands, and, till the separation of Holland with Belgium, alternately with the Hague the seat of the government. It is also the capital of the province of South Brabant, and of the circle, containing ten cantons and a hundred and twenty-nine communes, which takes its name. It is built partly on a plain through which the river Senne runs, and partly on the side of a hill which rises above it. The buildings in the lower part or

old town are larger, and, though of antique forms, handsome; but the upper or new town is one of the most splendid collection of buildings to be found on any part of the Continent. The park, near to which are the royal palace, the houses of the legislature, and the dwellings of persons of the first rank, is a very pleasing object. The most remarkable buildings are the town-house, with a beautiful tower three hundred and sixty-five feet in height, the theatre, the arsenal, the church of St Gudule, the cathedral, and the church of the Capuchins. Brussels is a manufacturing city of great activity. It has long been celebrated for its lace and its carpets; but though the demand for these goods has rather diminished, there have been substituted others whose demands exceed theirs. Very extensive establishments have been formed for making cotton goods of all kinds, woollens of a superior quality, hats, paper, glass, soap, starch, chemical preparations, and various minute articles for dress and furniture. There are, besides, distilleries, refineries for salt and sugar, and several large breweries. Coach-making is a very important branch of industry, and all kinds of carriages are elegantly built. This trade employs many hundreds of workmen. There are in Brussels establishments for the promotion of learning, science, and the fine arts, with collections of paintings, and a valuable library of 120,000 volumes. With the exception of London, no city in Europe has made so great progress, either in extent, in wealth, or in embellishments, as Brussels. The population in 1814 was 72,000, but it is now 100,000. Long. 4. 16. 10. E. Lat. 50. 59. 50. N.

BRUTE, a general name for all animals except mankind.

Among brutes the monkey kind bear the nearest resemblance to man, both in the external shape and internal structure, but more in the former than in the latter. In the monkey kind the highest and the nearest approach to the likeness of man is the ourang outang, or *Homo Sylvestris*. (See MAMMALIA.) The structure and economy of brutes make the objects of what is called COMPARATIVE ANATOMY. (See vol. iii. page 1, of this work.)

Philosophers have been much puzzled about the essential characteristics of brutes, by which they may be distinguished from man. Some define a brute to be an *animal not risible, or a living creature incapable of laughter*; others call them *mute animals*. The Peripatetics allowed them a sensitive power, but denied them a rational one. The Platonists allowed them reason and understanding, though in a degree less pure and refined than that of men. Lactantius allows every thing to brutes which men have, except a sense of religion; and even this has been ascribed to them by some sceptics. Descartes maintained that brutes are mere inanimate machines, absolutely destitute not only of reason, but of all thought and perception, and that all their actions are only consequences of the exquisite mechanism of their bodies. This system, however, is much older than Descartes; it was borrowed by him from Gomez Pereira, a Spanish physician, who employed thirty years in composing a treatise which he entitled *Antoniana Margarita*, from the Christian names of his father and mother. It was published in 1554; but his opinion had not the honour of gaining partisans, nor even of being refuted, so that it died with him. Even Pereira seems not to have been the inventor of this notion, something like it having been held by several of the ancients, as we find from Plutarch and St Augustin. Others who rejected the Cartesian hypothesis, have maintained that brutes are endowed with a soul essentially inferior to that of men; and to this soul some have allowed immortality, others not. And, lastly, in a treatise published by one Bougeant, a Jesuit, entitled *A Philosophical Amusement on the Lan-*

guage of Beasts, he affirms that they are animated by evil spirits or devils.

The opinion of Descartes was probably invented, or at least adopted, by him, to refute two great objections: one against the immortality of the souls of brutes, if they were allowed to have any; the other against the goodness of God, in suffering creatures who had never sinned to be subjected to so many miseries. The arguments in favour of it may be stated as follow: 1. It is certain that a number of human actions are merely mechanical, because they are done imperceptibly to the agent, and without any direction from the will, which are to be ascribed to the impression of objects and the primordial disposition of the machine, wherein the influence of the soul has no share; of which number are all habits of the body acquired from the reiteration of certain actions. In all such circumstances human beings are no better than automata. 2. There are some natural movements so involuntary that we cannot restrain them; for example, that admirable mechanism ever on the watch to preserve an equilibrium when we stoop, bend, or incline our bodies in any way, and when we walk upon a narrow plank. 3. The natural liking for, and antipathy against, certain objects, which in children precede the power of knowing and discriminating them, and which sometimes in grown persons triumph over all the efforts of reason, are all phenomena to be accounted for from the wonderful mechanism of the body, and are so many cogent proofs of that irresistible influence which objects have on the human frame. 4. Every one knows how much our passions depend on the degree of motion into which the blood is put, and the reciprocal impressions caused by the animal spirits between the heart and brain, that are so closely connected by their nerves; and if such effects may be produced by such simple mechanical means as the mere increase of motion in the blood, without any direction of the will, we are not to wonder at the actions of brutes being the effects only of a refined mechanism, without thought or perception. 5. A further proof will arise from a consideration of the many wonderful effects which even the ingenuity of men has contrived to bring about by mechanical means; the androïde, for instance, of Mr Kempell, which played at chess. Now it is not to be questioned but that the mechanism of the body of the meanest animal infinitely surpasses that of Mr Kempell's machine; and what can be the consequence of this, but that the actions of that animal must be proportionably more surprising than those of the wooden chess player? See ANDROIDES and AUTOMATON.

The above is a short abstract of all the arguments that are brought in favour of the Cartesian system; but they are evidently very far from being conclusive. They are deficient, in the first place, because, though we allow them in the utmost extent the Cartesians themselves can desire, they prove only the possibility of brutes being inanimate, and that the power of God actually could produce such and such actions from inanimate machines; but that he has actually done so, they have not the least tendency to prove. In the second place, the Cartesian argument is insufficient, because it has no limits, and knows not where to stop. By the same method of arguing every man might prove his neighbour to be an inanimate machine; for though every individual be conscious of his own thoughts, he is not so of those of his neighbours; and it no more exceeds the power of God to cause an inanimate machine to perform the actions of a man than those of a beast. Neither are the two objections which the hypothesis is calculated to answer to be at all admitted as arguments in its favour. They are, 1. That if we allow brutes to have souls, they must be immaterial, and consequently immortal; and, 2. It seems a contradiction to the goodness of God to think

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that he should subject innocent creatures to such a multitude of evils as we see the brute creation endure in this world. The first of these is productive of no bad consequences to us, though it should be granted; and if it is supposed that the brute creatures are really immortal, the second objection vanishes, because, in the enjoyment of endless felicity, all temporary afflictions, how severe soever, must be swallowed up as though they had never been.

As to a positive proof on the other side, namely, that brutes are really endowed with sensation and consciousness, there is undoubtedly the same evidence for the sensibility of brutes that there is for that of mankind. We see brutes avoid pain as much as we do; and we likewise see them seek for pleasure, and express their happiness in the enjoyment of certain things by signs not at all equivocal. Therefore, though we grant the possibility of all this being the effect of mere mechanism, yet, as we are conscious that in ourselves similar effects are produced by a sentient principle, we have all the reason in the world to conclude that in brutes they are likewise derived from a principle of sensation, especially seeing we know of no kind of mechanism in any other part of nature which produces any thing like the effects just mentioned; and until we see that a mechanism of this kind does take place in some part of nature, we have no reason to suppose it in any. As to those actions of the human body in which it seems to move spontaneously, like an automaton, without the direction of the mind or will, it is almost superfluous to observe, that they were not performed in this manner originally, but required very great exertions of the will and intellectual faculty before the body could be brought to perform them easily; so that from these nothing can be inferred. Add to this, that divine revelation sets forth to us in many places the brute creation as objects of mercy, which could not be done without the highest absurdity, if they were not really capable of feeling pleasure and pain as well as we.

The most rational opposers of the Cartesian scheme maintain that brutes are endowed with a principle of sensation as well as we, though of an inferior nature to ours. Great disputes, however, have arisen on this subject, some maintaining that the soul of brutes is merely sensitive, and that they are altogether destitute of reflection and understanding; others, that they not only reason, but make a better use of it than men do. That the brutes are endowed only with sensation, and totally destitute of all power of reflection, or even reasoning, is what can by no means be maintained on good grounds; neither can it be asserted that they act entirely from instinct or a blind propensity to certain things without knowing why or wherefore. In numberless instances, needless to be mentioned here, but which will readily occur to every reader, it is evident that education will get the better of many of the natural instincts of brutes, which could never be the case were they absolutely incapable of reasoning. On the other hand, it is equally certain that they are by no means capable of education in the same degree that men are, neither are the rational exertions of beasts at all to be compared even with those of the meanest savages. One remarkable instance of this is in the use of the element of fire. The most savage nations have known how to make this element subservient to their purposes; or if some have been found who have been entirely ignorant of its existence, they have quickly learned its uses on seeing it employed by others; but though many of the brute creatures are delighted with warmth, and have opportunities every day of seeing how fire is supplied with fuel, and thereby preserved, it never was known that one of them attempted to preserve a fire by this means. This shows a strange defect of rationality, unaccountable upon any other

supposition than that the soul or sentient principle of brutes is somehow or other inferior in its nature to that of man; but still it is a sentient principle, capable of perceptions as quick as our own, and in many instances much more so.

Father Bougeant supports his opinion of the spirits of brute creatures being devils in the following manner:— Having proved at large that beasts naturally have understanding, he says, "Reason naturally inclines us to believe that beasts have a spiritual soul; and the only thing that opposes this sentiment is the consequences that might be inferred from it. If brutes have a soul, that soul must be either matter or spirit; it must be one of the two, and yet you dare affirm neither. You dare not say it is matter, because you must then necessarily suppose matter to be capable of thinking; nor will you say that it is spirit, this opinion bringing with it consequences contrary to the principles of religion; and this, among others, that man would differ from beasts only by the degrees of plus and minus, which would demolish the very foundation of all religion. Therefore, if I can elude all these consequences; if I can assign to beasts a spiritual soul without striking at the doctrines of religion, it is evident that my system, being moreover the most agreeable to reason, is the only warrantable hypothesis. Now I shall, and can do it, with the greatest ease imaginable. I even have means, by the same method, to explain many very obscure passages in the holy Scripture, and to resolve some very great difficulties which are not well confuted. This we shall unfold in a more particular manner.

"Religion teaches us that the devils, from the very moment they had sinned, were reprobate, and that they were doomed to burn for ever in hell; but the church has not yet determined whether they do actually endure the torments to which they are condemned. It may then be thought that they do not yet suffer them, and that the execution of the verdict brought against them is reserved for the day of the final judgment. Now, what I pretend to infer from hence is, that, till doomsday comes, God, in order not to suffer so many legions of reprobate spirits to be of no use, has distributed them through the several spaces of the world, to serve the designs of his providence, and make his omnipotence to appear. Some continuing in their natural state, busy themselves in tempting men, in seducing and tormenting them, either immediately, as Job's devil, and those that lay hold of human bodies, or by the ministry of sorcerers or phantoms. These wicked spirits are those whom the Scripture calls the *powers of darkness*, or the *powers of the air*. God, with the others, makes millions of beasts of all kinds, which serve for the uses of men, which fill the universe, and cause the wisdom and omnipotence of the Creator to be admired. By that means I can easily conceive, on the one hand, how the devils can tempt us; and, on the other, how beasts can think, know, have sentiments, and a spiritual soul, without any way striking at the doctrines of religion. I am no longer surprised to see them have forecast, memory, and judgment. I should rather have occasion to wonder at their having no more, since their soul very likely is more perfect than ours. But I discover the reason of this; it is because, in beasts as well as in ourselves, the operations of the mind are dependent on the material organs of the machine to which it is united; and those organs being grosser and less perfect than in us, it follows that the knowledge, the thoughts, and the other spiritual operations of the beasts, must of course be less perfect than ours; and if these proud spirits know their own dismal state, what a humiliation must it be to them thus to see themselves reduced to the condition of beasts! But whether they know it or not, so shameful a degradation is still, with regard to them, the primary effect of the

ate. divine vengeance I just mentioned; it is an anticipated hell."

Having mentioned the prejudices against this hypothesis, such particularly as the pleasure which people of sense and religion take in beasts and birds, especially all sorts of domestic animals, he proceeds, "Do we love beasts for their own sakes? No. As they are altogether strangers to human society, they can have no other appointment but that of being useful and amusing. And what care we whether it be a devil or any other creature that amuses us? The thought of it, far from shocking, pleases me mightily. I with gratitude admire the goodness of the Creator, who gave me so many little devils to serve and amuse me. If I am told that these poor devils are doomed to suffer eternal tortures, I admire God's decrees, but I have no manner of share in that dreadful sentence; I leave the execution of it to the sovereign judge; and, notwithstanding this, I live with my little devils as I do with a multitude of people, of whom religion informs me that a great number shall be damned. But the cure of a prejudice is not to be effected in a moment; it is done by time and reflection: give me leave, then, lightly to touch upon this difficulty, in order to observe a very important thing to you.

"Persuaded as we are that beasts have intelligence, have we not all of us a thousand times pitied them for the excessive evils which the majority of them are exposed to, and in reality suffer? How unhappy is the condition of horses! we are apt to say upon seeing a horse whom an unmerciful carman is murdering with blows. How miserable is the dog whom they are breaking for hunting! How dismal is the fate of beasts living in woods! they are perpetually exposed to the injuries of the weather; always seized with apprehensions of becoming the prey of hunters, or of some wilder animal; for ever obliged, after long fatigue, to look out for some poor insipid food; often suffering cruel hunger; and subject, moreover, to illness and death! If men are subject to a multitude of miseries that overwhelm them, religion acquaints us with the reason of it, viz. the being born sinners. But what crimes can beasts have committed by birth to be subject to evils so very cruel? What are we, then, to think of the horrible excesses of miseries undergone by beasts? miseries, indeed, far greater than those endured by men. This is, in any other system, an incomprehensible mystery; whereas nothing is more easy to be conceived from the system I propose. The rebellious spirits deserve a punishment still more rigorous, and happy it is for them that their punishment is deferred. In a word, God's goodness is vindicated, man himself is justified; for what right can we have, without necessity, and often in the way of mere diversion, to take away the lives of millions of beasts, if God had not authorized us so to do? And beasts being as sensible as ourselves of pain and death, how could a just and merciful God have given man that privilege, if they were not so many guilty victims of the divine vengeance?

"But hear still something more convincing, and of greater consequence. Beasts by nature are extremely vicious. We know well that they never sin, because they are not free; but this is the only condition wanting to make them sinners. The voracious birds and beasts of prey are cruel. Many insects of one and the same species devour one another. Cats are perfidious and ungrateful, monkeys are mischievous, and dogs envious. All beasts in general are jealous and revengeful to excess, not to mention many other vices we observe in them; and at the same time that they are by nature so very vicious, they have, say we, neither the liberty nor any helps to resist the bias that hurries them into so many bad actions. They are, according to the schools, necessitated

to do evil, to disconcert the general order, to commit whatever is most contrary to the notion we have of natural justice and to the principles of virtue. What monsters are these in a world originally created for order and justice to reign in? This is, in good part, what formerly persuaded the Manicheans that there were of necessity two orders of things, one good and the other bad; and that the beasts were not the work of the good principle: a monstrous error! But how then shall we believe that beasts came out of the hands of their Creator with qualities so very strange! If man is so very wicked and corrupt, it is because he has himself through sin perverted the happy nature that God had given him at his creation. Of two things then we must say one; either that God has taken delight in making beasts so vicious as they are, and of giving us in them models of what is most shameful in the world; or that they have, like man, original sin, which has perverted their primitive nature.

"The first of these propositions finds very difficult access to the mind, and is an express contradiction to the holy Scriptures, which say, that whatever came out of God's hands at the time of the creation of the world was good, yea very good. What good can there be in a monkey's being so very mischievous, a dog so full of envy, a cat so malicious? But then many authors have pretended that beasts, before man's fall, were different from what they are now; and that it was in order to punish man that they became so wicked. But this opinion is a mere supposition, of which there is not the least footstep in holy Scripture. It is a pitiful subterfuge to elude a real difficulty. This at most might be said of the beasts, with whom man has a sort of correspondence; but not at all of the birds, fishes, and insects, which have no manner of relation to him. We must then have recourse to the second proposition, that the nature of beasts has, like that of man, been corrupted by some original sin: another hypothesis, void of foundation, and equally inconsistent with reason and religion, in all the systems which have been hitherto espoused concerning the souls of beasts. What party are we to take? Why, admit of my system, and all is explained. The souls of beasts are refractory spirits, which have made themselves guilty towards God. The sin in beasts is no original sin; it is a personal crime, which has corrupted and perverted their nature in its whole substance; hence all the vices and corruption we observe in them, though they can be no longer criminal, because God, by irrevocably reprobating them, has at the same time divested them of their liberty."

These quotations contain the strength of Father Bougeant's hypothesis, which also has had its followers; but the reply to it is very obvious. Beasts, though remarkably mischievous, are not completely so; they are in many instances capable of gratitude and love, which devils cannot possibly be. The very same passions which are implanted in the brutes exist in the human nature; and if we choose to argue from the existence of those passions, and the ascendancy they at some times have over mankind, we may say with as great justice that the souls of men are devils, as that the souls of brutes are devils. All that can reasonably be inferred from the greater prevalency of the malignant passions among the brutes than among men, is, that the former have less rationality than men; and accordingly it is found that among savages, who exercise their reason less than other men, every species of barbarity is practised without being deemed a crime.

On the present subject there is a very ingenious treatise in German, published by Professor Bergman, under the title of "Researches designed to show what the brute animals certainly are not, and also what they probably are." That they are not machines, he proves with more

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But if animals are not mere machines, what are they? Manifestly sensitive beings, with an immaterial principle; and thinking or reasoning beings to a certain degree. In certain classes of animals this appears evident to our author, who seems to have observed with great sagacity and attention their various operations and proceedings, their ways and means, &c. He thinks it impossible to deduce this variety of action, in any animals, if we except those of the lowest classes in the gradation of intelligence, from a general and uniform instinct. For they accommodate their operations to times and circumstances. They combine; they choose the favourable moment; they avail themselves of the occasion, and seem to receive instruction by experience. Many of their operations announce reflection: the bird repairs a shattered nest, instead of constructing instinctively a new one; the hen who has been robbed of her eggs changes her place in order to lay the remainder with more security; the cat discovers both care and artifice in concealing her kittens. Again, it is evident that on many occasions animals know their faults and mistakes, and correct them; they sometimes contrive the most ingenious methods of obtaining their ends, and when one method fails have recourse to another; and they have, without doubt, a kind of language for the mutual communication of their ideas. How is all this to be accounted for, says our author, unless we suppose them endowed with the powers of perceiving, thinking, remembering, comparing, and judging? They have these powers, indeed, in a degree inferior to that in which they are possessed by the human species, and form classes below them in the graduated scale of intelligent beings. But still it seems to our author unreasonable to exclude them from the place which the principles of sound philosophy, and facts ascertained by constant observation, assign to them in the great and diversified sphere of life, sensation, and intelligence. He does not, however, consider them as beings whose actions are directed to moral ends, nor consequently as accountable and proper subjects for reward or punishment in a future world.

That brute animals possess reflection and sentiment, and are susceptible of the kindly as well as the irascible passions, independently of sexual attachment and natural affection, is evident from the numerous instances of affection and gratitude daily observable in different animals, particularly the dog. Of these and other sentiments, such as pride, and even a sense of glory, the elephant exhibits proofs equally surprising and indubitable.

As to the natural affection of brutes, says an ingenious writer, "the more I reflect on it the more I am astonished at its effects. Nor is the violence of this affection more wonderful than the shortness of its duration. Thus every hen is in her turn the virago of the yard, in proportion to the helplessness of her brood; and will fly in the face of a dog or a sow, in defence of those chickens which in a few weeks she will drive before her with relentless cruelty. This affection sublimates the passions, quickens the invention, and sharpens the sagacity of the brute creation. Thus a hen, just become a mother, is no longer that placid bird she used to be; but, with feathers standing on end, wings hovering, and clucking note, she runs about like one possessed. Dams will throw themselves in the way of the greatest danger, in order to avert it from their progeny. Thus a partridge will tumble along before a sportsman, in

order to draw away the dogs from her helpless covey. In the time of nidification the most feeble birds will assault the most rapacious. All the hirundines of a village are up in arms at the sight of a hawk, whom they will persecute till he leaves that district. A very exact observer has often remarked, that a pair of ravens nestling in the rock of Gibraltar would suffer no vulture or eagle to rest near their station, but would drive them from the hill with amazing fury; even the blue thrush, at the season of breeding, would dart out from the clefts of the rocks to chase away the kestrel or the sparrow-hawk. If you stand near the nest of a bird that has young, she will not be induced to betray them by an inadvertent fondness, but will wait about at a distance with meat in her mouth for an hour together. The fly-catcher builds every year in the vines that grow on the walls of my house. A pair of these little birds had one year inadvertently placed their nest on a naked bough, perhaps in a shady time, not being aware of the inconvenience that followed; but a hot sunny season coming on before the brood was half fledged, the reflection of the wall became insupportable, and must inevitably have destroyed the tender young, had not affection suggested an expedient, and prompted the parent-birds to hover over the nest all the hotter hours, while with wings expanded and mouths gaping for breath they screened off the heat from their suffering offspring. A further instance I once saw of notable sagacity in a willow-wren, which had built in a bank in my fields. This bird a friend and myself had observed as she sat in her nest; but were particularly careful not to disturb her, though we saw she eyed us with some degree of jealousy. Some days after, as we passed that way, we were desirous of remarking how this brood went on; but no nest could be found, till I happened to take up a large bundle of long green moss, as it were carelessly thrown over the nest in order to dodge the eye of any impertinent intruder." (White's *Natural History of Selborne*.)

A wonderful spirit of sociality in the brute creation, independent of sexual attachment, has been frequently remarked. Many horses, though quiet with company, will not stay one minute in a field by themselves; nor can the strongest fences restrain them. A horse has been known to leap out at a stable window through which dung was thrown, after company. Oxen and cows will not fatten by themselves, but will neglect the finest pasture that is not recommended by society. It would be needless to instance sheep, which constantly flock together. But this propensity seems not to be confined to animals of the same species.

Even great disparity of kind and size does not always prevent social advances and mutual fellowship. Of this the following remarkable instance is given in the work above quoted: "A very intelligent and observant person has assured me, that in the former part of his life, keeping but one horse, he happened also on a time to have but one solitary hen. These two incongruous animals spent much of their time together in a lonely orchard, where they saw no creature but each other. By degrees an apparent regard began to take place between these two sequestered individuals. The fowl would approach the quadruped with notes of complacency, rubbing herself gently against his legs; while the horse would look down with satisfaction, and move with the greatest caution and circumspection, lest he should trample on his diminutive companion. Thus by mutual good offices each seemed to console the vacant hours of the other; so that Milton, when he puts the following sentiment in the mouth of Adam, seems to be somewhat mistaken:

Much less can bird with beast, or fish with fowl,
So well converse, nor with the ox the ape."

~te. To such an instance of attachment between incongruous animals from a spirit of sociality or the feelings of sympathy, may be added the following instance of fondness from a different motive, recounted by Mr White, in the work already quoted. "My friend had a little helpless leveret brought to him, which the servants fed with milk in a spoon; and about the same time his cat kittened, and the young were dispatched and buried. The hare was soon lost, and supposed to be gone the way of most foundlings, or to be killed by some dog or cat. However, in about a fortnight, as the master was sitting in his garden in the dusk of the evening, he observed his cat, with tail erect, trotting towards him, and calling with little short inward notes of complacency, such as they use towards their kittens, and something gambling after, which proved to be the leveret, which the cat had supported with her milk, and continued to support with great affection. Thus was a graminivorous animal nurtured by a carnivorous and predaceous one.

"Why so cruel and sanguinary a beast as a cat, of the ferocious genus of *Felis*, the *murium leo*, as Linnæus calls it, should be affected with any tenderness towards an animal which is its natural prey, is not so easy to determine. This strange affection probably was occasioned by that desiderium, those tender maternal feelings, which the loss of her kittens had awakened in her breast, and by the complacency and ease she derived to herself from the procuring her teats to be drawn, which were too much distended with milk, till from habit she became as much delighted with this foundling as if it had been her real offspring.

"This incident is no bad solution of that strange circumstance which grave historians as well as the poets assert, of exposed children being sometimes nurtured by female wild beasts that probably had lost their young; for it is not one whit more marvellous that Romulus and Remus, in their infant state, should be nursed by a she-wolf, than that a poor little sucking leveret should be fostered and cherished by a bloody grimalkin."

But besides the different qualities enumerated, besides reflection and sagacity often in an astonishing degree, and besides the sentiments and actions prompted by social or natural attachments, certain brutes seem on many occasions inspired with a superior faculty, a kind of presentiment or second sight as it were, with regard to events and designs altogether unforeseen by the rational beings whom they concern. Of the faculty alluded to various instances will probably consist with the knowledge or the recollection of most readers: we shall therefore only recite the following, on account of its unquestionable authenticity. At the seat of the Earl of Lichfield, three miles from Blenheim, there is a portrait in the dining-room, of Sir Henry Lee, by Johnston, with that of a mastiff-dog which saved his life. It seems a servant had formed the design of assassinating his master and robbing the house; but the night he had fixed on, the dog, which had never been much noticed by Sir Henry, for the first time followed him up stairs, got under his bed, and could not be got from thence by either master or man: in the dead of night the same servant entered the room to execute his horrid design, but was instantly seized by the dog, and being secured, confessed his intentions. Upon what hypothesis can we account for a degree of foresight and penetration such as this? Or will it be suggested, as a solution of the difficulty, that a dog may possibly become capable in a great measure of understanding human discourse, and of reasoning and acting accordingly; and that, in the present instance, the villain had either uttered his design in soliloquy, or imparted it to an accomplice, in the hearing of the animal?

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It has been much disputed whether the brutes have any language by which they can express their minds to each other; or whether all the noise they make consists only of cries inarticulate, and unintelligible even to themselves. We are, however, too little acquainted with the intellectual faculties of these creatures to be able to determine this point. Certain it is, that their passions, when excited, are generally productive of some peculiar cry; but whether this be designed as an expression of the passion to others, or only a mechanical motion of the muscles of the larynx occasioned by the passion, is what we have no means of knowing. We may, indeed, from analogy, conclude with great reason, that some of the cries of beasts are really expressions of their sentiments; but whether one beast is capable of forming a design, and communicating that design by any kind of language to others, is what we submit to the judgment of the reader, after giving the following instance, which, with others, is brought as a proof of it by Father Bougeant. "A sparrow finding a nest that a martin had just built, standing very conveniently for him, possessed himself of it. The martin, seeing the usurper in her house, called for help to expel him. A thousand martins came full speed, and attacked the sparrow; but the latter being covered on every side, and presenting only his large beak at the entrance of the nest, was invulnerable, and made the boldest of them who durst approach him repent of their temerity. After a quarter of an hour's combat, all the martins disappeared. The sparrow thought he had got the better, and the spectators judged that the martins had abandoned their undertaking. Not in the least. They immediately returned to the charge; and each of them having procured a little of that tempered earth with which they make their nests, they all at once fell upon the sparrow, and inclosed him in the nest to perish there, though they could not drive him thence. Can it be imagined that the martins could have been able to hatch and concert this design all of them together without speaking to each other, or without some medium of communication equivalent to language?" We refer those curious in this subject, to a work in two volumes, published at Amsterdam, entitled *Histoire critique de l'Âme des Bêtes, contenant les sentimens des Philosophes Anciens et ceux des Modernes sur cette matière*. Par. M. Guer, Avocat.

BRUTII, in *Ancient Geography*, one of the two peninsulas of Italy (the ancient Calabria being the other); stretching to the south towards Sicily; bounded by the sea on every side except by the isthmus, between the river Laus and the Thurii, where it is terminated by Lucania; and inhabited by the Brutii, for whose country the ancient Romans had no peculiar name, calling both the people and the country indiscriminately *Brutii*.

BRUTON, a market-town of the hundred of the same name, in the county of Somerset, a hundred and nine miles from London, on the river Brue. It is a well-built town, at which the quarter-sessions for the county are held. Some silk mills have been established here, and some trade is carried on in stockings and woollen goods. The market is held on Saturday. The inhabitants amounted in 1801 to 1631, in 1811 to 1536, and in 1821 to 1858.

BRUTUS, or BRUTE, according to the old exploded history of this country by Geoffroy of Monmouth, was the first king of Britain. He is said to have been the son of Sylvius, who was the son of Ascanius the son of Æneas, and born in Italy. Killing his father by chance, he fled into Greece, where he took prisoner King Padrosus, who kept the Trojans in slavery, but released him on condition of his providing ships for the Trojans to quit the land. Being advised by the oracle to sail west beyond Gaul, he, after some adventures, landed at Totness in Devonshire. Albion was then inhabited by a remnant of giants, whom Brutus

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destroyed. He called the island after his own name, *Britain*. He built a city called *New Troy*, since London; and having reigned there twenty-four years, at his death parcelled the island among his three sons: Locrine having the middle, called *Loegria*; Camber, Wales; and Albanach, Scotland.

BRUTUS, *Lucius Junius*, the avenger of the rape of Luceetia, and founder of the Roman republic, flourished five hundred years before Christ. See *ROME*.

BRUTUS, *Marcus*, the passionate lover of his country, and chief conspirator against Cæsar, slew himself on losing the battle of Philippi, forty-two years before Christ. See *ROME*.

BRUX, a city in the circle of Saatz, and Austrian kingdom of Bohemia. It is situated on the river Vila, and contains a philosophical institution with six professors, four churches, a monastery, and 2950 inhabitants, who carry on cotton and mineral acid manufactures.

BRUYERE, JOHN DE LA, a celebrated French author, was born at Dourdan in the year 1664. He wrote Characters describing the manners of his age, in imitation of Theophrastus; which characters were not always imaginary or general, but descriptive, as was well known at the time, of persons of considerable rank. In the year 1693 he was by an order of the king chosen a member of the French Academy, and died in the year 1696. "The Characters of Bruyère," says Voltaire, "may justly be ranked among the extraordinary productions of his age. Antiquity furnishes no examples of such a work. A style rapid, concise, and nervous; expression animated and picturesque; a use of language altogether new, without offending against its established rules, struck the public at first; and the allusions which are crowded in almost every page completed its success. When La Bruyère showed his work in manuscript to Malesieux, this last told him that the book would have many readers, and its author many enemies. It somewhat sunk in the opinion of men, when that whole generation whose follies it attacked were passed away; yet as it contains many things applicable to all times and places, it is more than probable that it will never be forgotten."

BRYANT, SIR FRANCIS, a soldier, statesman, and a poet of no inconsiderable fame in his time. In the year 1522, the 14th of Henry VIII., he attended in a military capacity the Earl of Surrey in his expedition to the coast of Brittany, and commanded the troops in the attack of the town of Morlaix, which he took and burnt. For this service he was knighted on the spot by the earl. In 1529 he was sent ambassador to France, and the year following to Rome, on account of the king's divorce. He was gentleman of the privy chamber to king Henry VIII. and to his successor Edward VI., in the beginning of whose reign he marched with the protector against the Scots; and, after the battle of Musselburgh, in which he commanded the light horse, he was made banneret. In 1548 he was appointed chief governor of Ireland, where he married the Countess of Ormond. He died soon afterwards, and was buried at Waterford. He wrote, 1. Songs and Sonnets, some of which were printed with those of the Earl of Surrey and Sir Thomas Wyatt, Lond. 1565; 2. Letters written from Rome concerning the king's divorce, manuscript.

BRYANT, JACOB, a profound scholar, mythologist, and sacred historian, born at Plymouth in 1715. His father had a place in the customs, and was afterwards stationed in Kent, where his son was first sent to a provincial school, from which he was removed to Eton. Here he appears to have remained till 1736, the date of his election to King's College, Cambridge, and he took his degrees of bachelor and master of arts in 1740 and 1744. He returned to Eton in the capacity of private tutor to the late Duke of

Marlborough, then Marquis of Blandford; and the good taste which his pupil showed through life, in the protection of the fine arts, and in the pursuit of science, sufficiently demonstrated the beneficial influence of his instructor's example. In 1756 he went to the Continent as private secretary to the Duke of Marlborough, then master-general of the ordnance and commander-in-chief of the forces in Germany; and he was rewarded, after his return, for his various services to the family, by a lucrative appointment in the ordnance, which allowed him ample leisure to indulge his literary taste in a variety of refined investigations, and to exercise his zeal for the cause of religion in a multitude of works, calculated for the illustration of the Scriptures, and the demonstration of their authenticity and divine authority.

1. His first publication was entitled *Observations and Inquiries* relating to various parts of Ancient History, containing Dissertations on the wind Euroclydon, and on the island Melite, together with an account of Egypt in its most early state, and of the Shepherd Kings, 1767. In this work he attempts to prove that the Melite on which St Paul was wrecked was not Malta, but one of the Illyrian islands in the Adriatic, now called Melede; and he endeavours to illustrate several points in the early history of the oriental, and especially of the Aramitic nations.

2. But his most elaborate performance was his *New System or Analysis of Ancient Mythology*, wherein an attempt is made to divest tradition of fable, and to reduce truth to its original purity, 3 vols. 4to, 1774, 1776. In this attempt the author has equally displayed his deep and extensive learning and his inventive fancy; but it must be confessed that, on a minute examination, the work exhibits much more of a poetical imagination than of a sound judgment; and that, in endeavouring to substitute etymological for historical evidence, he has been completely unsuccessful. Nothing can afford a more satisfactory kind of proof than etymology taken on a large scale, and considered as a mode of tracing the relations of nations to each other, by the affinities of their languages; since the accumulation of a multitude of probabilities, each weak when taken separately, becomes at last equivalent to absolute certainty. But nothing, on the other hand, can be more fallacious, or more liable to controversy, than single etymological inferences, in particular cases, when one of these slight resemblances is magnified into a striking likeness, and even an identity, which is then made the foundation of a magnificent superstructure in mythology or in history. Mr Richardson has shown, in the Preface to his *Dictionary*, how much Mr Bryant was mistaken in some of his reasoning respecting the signification and derivation of particular words; and even if he had been more correct in these instances, the conclusions which he has deduced from his etymologies would by no means have been perfectly legitimate. Jablonsky seems to have exhibited one of the strongest examples of this dangerous abuse of learning, in which he has been followed not only by Mr Bryant, but by several other modern writers equally visionary, who have commonly been very imperfectly acquainted with the languages on which their conjectures depended, and have been still more deficient in that sort of common sense and correct feeling, confirmed by experience, which constitutes the most essential part of the qualifications of a critic, and the want of which can never be compensated by the most unwearied labour of a mere mechanical commentator.

3. Some remarks which had been made on particular passages of Mr Bryant's work led him to publish *A Vindication of the Apamean Medal*; of the inscription NOE; and of another coin, in the *Archæologia*, vol. iv. art. 21,

22, 23. 4. He deviated somewhat more widely from the usual objects of his researches, and apparently without any decided advantage over his adversary, in *An Address to Dr Priestley*, on the doctrine of philosophical necessity, 8vo, 1780. 5. He also published in the same year *Vindiciæ Flavianæ*, or a vindication of the testimony given by Josephus concerning our Saviour, 8vo.

6. Unfortunately for the credit of his critical discrimination in matters of old English literature, Mr Bryant was the author of *Observations on the Poems of Thomas Rowley*, in which the authenticity of these poems is ascertained, 2 vols. 12mo, 1781. If there could be any excuse for the commission of forgeries like that of Chatterton, it would be found in their serving as a valuable test of the degree of confidence which it is justifiable to place in the decrees of the most powerful critics respecting other questions of a more ambiguous nature.

7. Mr Bryant contributed to the publication of the *Duke of Marlborough's Collection of Gems*, the Latin explanations contained in the first volume, fol. 1783. 8. He inserted in the *Archæologia*, vii. 387, some *Collections on the Zingara or Gipsy Language*, which has been since sufficiently proved to be one of the many derivatives of the old Sanscrit. 9. Some time afterwards he published an anonymous *Treatise on the Authenticity of the Scriptures*, and the truth of the Christian religion, 1792. 10. This was succeeded by his *Observations upon the Plagues inflicted upon the Egyptians*, 8vo, 1794.

11. His opinions respecting the existence of the city of Troy, and the veracity of Homer as a historian, raised up against him a host of powerful adversaries; and in a question of this nature, upon which the decisions of mankind are so manifestly influenced by their sensibility to poetical beauty, and their early habits and attachments, a much more cautious attempt to innovate might easily have been unsuccessful. Whatever learning and talents may have been exhibited in this controversy, it will hardly be believed by an impartial judge, reasoning on the general probabilities of the case, that Homer intended the actions of his heroes, any more than their genealogies, to be historically correct; but, at the same time, it will readily be admitted that he was much more likely to take, for the scene of his poem, a town that had really existed, and, for its subject, a traditional report of a war which had actually been carried on, than to have invented a fabulous city and an imaginary warfare, without any historical foundation whatever. Mr Bryant published on this subject *Observations on a Treatise entitled Description of the Plain of Troy*, by Mr de Chevalier, 4to, 1795. 12. *A Dissertation concerning the War of Troy*, and the expedition of the Greeks, as described by Homer; showing that no such expedition was ever undertaken, and that no such city in Phrygia existed; 4to, 1796. 13. *Observations on the Vindication of Homer*, written by J. B. S. Morritt, Esq. 4to, 1799.

14. He had, in the mean time, not discontinued his theological studies, and had published an *Essay on The Sentiments of Philo Judæus* concerning the word of God, 8vo, 1797. His last work was a volume of *Dissertations on various Subjects in the Old Testament*, which had been nearly completed thirty years before. The subjects which had particularly attracted his attention were the histories of Balaam, Sampson, and Jonah; and besides Philo Judæus and Josephus, he had endeavoured to illustrate some controverted passages of Justin Martyr, as well as many other departments of religious and historical discussion.

The habits of Mr Bryant's maturer life were in general completely sedentary; although, in his youth, he had taken his full share in the cultivation of the manly exer-

cises common to Etonians, and had once the good fortune to save, by his proficiency in swimming, the life of Dr Barnard, afterwards provost of Eton. His conversation was elegant and animated, his manners mild but firm; he exerted himself to please others, and was himself easily pleased. He was much courted in society, and his residence at Cypenham, near Windsor, was not unfrequently visited by persons of the highest possible rank. He never married. He died in his eighty-ninth year, the 14th November 1804, from the immediate consequence of an accidental blow. He left his library to King's College, having, however, previously made some valuable presents out of it to the king and to the Duke of Marlborough. He also bequeathed L.2000 to the Society for the Propagation of the Gospel, and L.1000 for the use of the superannuated collegers of Eton school. (*Gentleman's Magazine*, lxxiv. p. 1080, 1165; Nichols's *Literary Anecdotes*, iv. 667, 8vo, Lond. 1812; Aikin's *Biographical Dictionary*, x.) (L. L.)

BRYENNIUS, MANUEL, a Greek writer on music, is supposed to have flourished under the elder Palæologus, namely, about the year of Christ 1120. He wrote three books of harmonics, the first of which is a kind of commentary on Euclid, as the second and third are illustrative of Ptolemy. Meibomius had given the public expectations of a translation of this work, but not living to complete it, Dr Wallis undertook it; and it now forms part of the third volume of his works, published at Oxford in three volumes folio, 1699.

BRZEZANI, a circle in the Austrian province of Galicia, extending over 2316 square miles, or 1,482,240 acres, and comprehending four cities, fourteen towns, 317 villages, and 30,371 houses. The inhabitants in 1817 amounted to 182,300, of whom 11,320 were Jews; but they have much increased since that period. The district is woody, but the rest of the land is highly fertile, and produces good corn, hemp, flax, tobacco, and fruit. The capital is a city of the same name on the river Lipa, containing a Greek, an Arminian, and a Catholic church, with 4650 inhabitants. Long. 24. 35. 40. E. Lat. 49. 30. 25. N.

BUA, an island in the Adriatic Sea, belonging to the province of Spalatro, in the Austrian kingdom of Dalmatia. It is situated on the coast, opposite to Trau; is rich in wine, oil, and fruit; and contains six populous villages. There is in it a remarkable well of asphaltum. Long. 14. 10. E. Lat. 43. 8. N.

BUAT-NANCAY, LOUIS GABRIEL, COUNT DU, was born of an old family in Normandy on the 2d of March 1732. At an early age he entered into the order of Malta; and, by a fortunate accident, he became acquainted with the Chevalier Folard, author of the *Commentaries on Polybius*, who received him into his house and superintended his education. Folard had a nephew, who was minister for France at different German courts, and under whom Buat studied history and diplomacy. He was successively minister for France at Ratisbon and Dresden; but afterwards, becoming disgusted with this career, he retired from public life in the year 1776. He died at Nançay, in Berry, on the 18th of September 1787.

Buat was a man of some talents and considerable literary attainments, but possessing little knowledge of the world; which circumstance seems to have in a great measure disqualified him for public employment. He appears to have written with great facility; but his style is very unequal. His works are: 1. *Tableau du Gouvernement actuel de l'Empire d'Allemagne*, translated from the German of Schmauss, with notes historical and critical, Paris, 1755, 12mo. 2. *Les Origines, ou l'Ancien Gouvernement de la France, de l'Italie, et de l'Allemagne*, published at the Hague, 1757, 4 vols. 12mo. 3. *Histoire Ancienne des Peuples de l'Europe*, Paris, 1772, 12 vols. 12mo. This is the

Bryennius
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Bubastis
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Bucaneer.

largest and perhaps the best work of Buat. 4. *Les Elémens de la Politique, ou Recherches sur les vrais Principes de l'Economie Sociale*, 1773, 6 vols. 8vo. 5. *Les Maximes du Gouvernement Monarchique, pour servir de suite aux Elémens*, 4 vols. 8vo. There is also ascribed to Buat a work entitled *Remarques d'un Français, ou Examen impartial du livre de M. Necker sur les Finances*, Geneva, 1785, 8vo. In his youth he had composed a tragedy, entitled *Charlemagne, ou le Triomphe des Lois*, published at Vienna, 1764, 8vo. He likewise contributed several articles to the journals of his time, on different points of history, literature, and political economy; in particular, some excellent observations on the character of Xenophon, inserted in the fourth volume of the *Variétés Littéraires*. (See *Biographie Universelle*.)

BUBASTIS, in the Egyptian mythology, one of the names of Isis or the moon. The Egyptians bestowed different names on the sun, either to characterize his effects or his relations with respect to the earth; and they followed the same method respecting the moon. Chæremón, a sacred writer of Egypt, leaves no doubt on this subject. "Every thing which is published of Osiris and Isis, all the sacerdotal fables, allude only to the phases of the moon and the course of the sun." Bubastis was one of the principal attributes of Isis. Theology having personified her, formed of her a divinity, in whose honour a city of that name was built, as described by Herodotus, and where the people collected from all parts of Egypt at a certain period of the year. The symbol of this deity was a cat, which the priests fed with sacred food; and when it died they embalmed its body, and carried it in pomp to the tomb prepared for it. The ancients have explained this worship variously. The Greeks pretend that when Typhon declared war against the gods, Apollo transformed himself into a vulture, Mercury into an ibis, and Bubastis into a cat, and that the veneration of the people for the latter animal took its rise from that fable; but they ascribe their own ideas to the Egyptians, who thought very differently. However that may be, the cat was greatly honoured in Egypt; and a Roman soldier having imprudently killed one, was immediately put to death by the populace. In the language of the priests, Bubastis was deemed the daughter of Isis, and even represented her in certain circumstances. It is for this reason that the Greeks, who honoured the moon by the name of Diana, bestowed it also on this Egyptian divinity. Bubastis, says Herodotus, is called Diana by the Greeks. The Egyptians attributed to her the virtue of assisting pregnant women; while the Greeks and Latins, disciples of the Egyptians, ascribed the same power to Diana.

BUC, GEORGE, a learned English antiquary, flourished in the beginning of the seventeenth century. In the reign of King James I. he was made one of the gentlemen of his majesty's privy chamber, and knighted; he was also constituted master of the revels. What he mostly distinguished himself by was his writing the *History of the Reign of Richard III.*; in which he takes great pains to wipe off the bloody stains which have tarnished the character of that prince, and represents his person and actions in a much less odious light than any other historian has done. He also wrote, a *Treatise of the Art of Revels*; and a work entitled *The Third Universitie of England*.

BUCANEER, one who dries and smokes flesh or fish after the manner of the Indians. The name was particularly given to the first French settlers on the island of St Domingo or Hayti, whose sole employment consisted in hunting bulls or wild boars, in order to sell their hides and flesh. The name has also been applied to those famous piratical adventurers, chiefly English and French, who joined together to commit depredations on the Spa-

niards of America. Of both these we shall give an account.

I. *The Buccaneers of St Domingo*.—The Spaniards had not long been in possession of the West Indies and of the continent of America, when other nations, especially the English and French, began to seek establishments there. But though the Spaniards were unable to people such extensive countries themselves, they were resolved that no others should do it for them, and therefore waged a cruel war on all those of any other nation who attempted to settle in any of the Antilles or Caribbee Islands. The French, however, were at last lucky enough to acquire some footing in the island of St Christophers; but by the time they began to subside into a regular form of government, the Spaniards found means to dislodge them. Upon this the wretched fugitives, considering at how great a distance they were from their mother country, and how near to the island of Hispaniola or St Domingo, the northern parts of which were then uninhabited, and full of swine and black cattle, immediately resolved to take possession of that country, in conjunction with several other adventurers of their own and the English nation; especially as the Dutch, who now began to appear in these seas, promised to supply them plentifully with all kinds of necessaries they might require, in exchange for the hides and tallow they should procure by hunting.

These new settlers obtained the name of *bucaneers*, from their custom of bucaning their beef and pork in order to keep it for sale or for their own consumption. But some of them soon grew tired of this new way of life, and took to planting; whilst many more chose to turn pirates, trusting to find among those who remained on shore a quick sale for all the plunder they could make at sea. This new body of adventurers were called *freebooters*, from their making free prey or booty of whatever came in their way.

The colony now began to thrive at a great rate, by the cheap and easy manner in which the freebooters acquired the greatest riches, and the profusion with which they distributed them amongst their old companions, the bucaners and planters, for the merest trifles. This brought numbers of settlers from France in quality of indentured servants, though they toiled rather like slaves than servants during the three years for which they generally bound themselves. One of these men presuming to represent to his master, who always fixed upon a Sunday for sending him with skins to the port, that God had forbidden such a practice when he had declared that "six days shalt thou labour, and on the seventh day shalt thou rest," the brutish bucaner replied, "And I say to thee, six days shalt thou kill bulls, and strip them of their skins, and on the seventh day shalt thou carry their hides to the sea shores;" and this command was followed by blows. Thus the colony consisted of four classes; bucaners, freebooters, planters, and indentured servants who generally remained with the bucaners or planters. And these four orders composed what they now began to call the *body of adventurers*, who lived together in perfect harmony, under a kind of democracy; every freeman having a despotic authority over his own family, and every captain being sovereign in his ship, though liable to be discarded at the discretion of the crew.

The planters had settled chiefly in the little island of Tortuga, on the northern coast of Hispaniola; but soon afterwards some of them having gone to the great island to hunt with the bucaners, the rest were surprised by the Spaniards; and all, even those who had surrendered at discretion in hopes of mercy, were put to the sword or hanged. The next care of the Spaniards was to rid the great island of the bucaners; and for this purpose they assembled a body of five hundred lance-men, who, by

bucaneer. their seldom going fewer than fifty in a company, obtained from their enemies the name of the *Fifties*. But before detailing the particulars of this attack we shall endeavour to give some account of the manners and customs of the people whom it was proposed to extirpate.

The bucaniers lived in little huts built on some spots of cleared ground, just large enough to dry their skins on, and contain their bucaning houses. These spots they called *boucans*, and the huts they dwelt in *ajoupas*, a word which they borrowed from the Spaniards, and the Spaniards from the natives. Though these ajoupas lay open on all sides, they were very agreeable to the hardy inhabitants, in a climate where wind and air are so very desirable things. As the bucaniers had neither wives nor children, they associated by pairs, and mutually rendered each other all the services a master could reasonably expect from a servant, living together in so perfect a community, that the survivor always succeeded his deceased partner. This kind of union or fellowship they called *s'emateloter* (insailoring), and each other *matelot* (sailor), whence is derived the custom of giving, at least in some parts of the French Antilles, the name *matelotage* (sailor-age) to any kind of society formed by private persons for their mutual advantage. They behaved to each other with the greatest justice and openness of heart; it was considered as a crime to keep any thing under lock and key; but, on the other hand, the least pilfering was unpardonable, and punished with expulsion from the community. And, indeed, there could be no great temptation to steal, seeing it was reckoned a point of honour never to refuse a neighbour what he wanted; and where there was so little property, it was impossible there should be many disputes. If any such happened, the common friends of the parties at variance interposed, and soon put an end to the difference.

As to laws, the bucaniers acknowledged none but an odd jumble of conventions made between themselves, which, however, they regarded as the sovereign rule. They silenced all objections by coolly answering, that it was not the custom of the coast; and grounded their right of acting in this manner on their baptism under the tropic, which freed them, in their opinion, from all obligations antecedent to that marine ceremony. The governor of Tortuga, when that island was again settled, though appointed by the French court, had very little authority over them; and they contented themselves with rendering him from time to time some slight homage. They had in a manner entirely shaken off the yoke of religion, and thought they did a great deal in not wholly forgetting the God of their fathers. We are surprised to meet with nations among whom it is a difficult matter to discover any trace of a religious worship; and yet it is certain, that had the bucaniers of St Domingo been perpetuated on the same footing on which they subsisted at the time we are speaking of, the third or fourth generation of them would have possessed as little religion as the Caffres and Hottentots of Africa, or the Cannibals of the South Sea Islands.

They even laid aside their surnames, and assumed nicknames or martial names, most of which afterwards continued in their families. Many, however, on their marrying, which seldom happened till they turned planters, took care to have their real surnames inserted in the French contract; and this practice gave occasion to a proverb, which long remained current in the French Antilles, that a man is not to be known till he takes a wife.

Their dress consisted of a filthy greasy shirt, dyed with the blood of the animals they killed; a pair of trousers still more nasty; a thong of leather by way of belt, to which they hung a case containing some Dutch knives, and a kind of short sabre called *manchette*; a hat without

any brim, except a little flap in the front; and shoes of hogskin, all of a piece. Their guns were four feet and a half in the barrel, and of a calibre sufficient to admit balls of an ounce. Every man had his contract servants, more or fewer according to his abilities; besides a pack of twenty or thirty dogs, among which there was always a couple of beagles. Their chief employment at first was ox-hunting; and if at any time they chased a wild hog, it was rather for pastime, or to make provision for a feast, than for any other advantage. But in process of time some of them betook themselves entirely to the hunting of hogs, whose flesh they bucaned in the following manner: first, they cut the flesh into long pieces, an inch and a half thick, and sprinkled them with salt, which they rubbed off after twenty-four hours; then they dried these pieces in stoves, over a fire made of the skin and bones of the beast, till they grew as hard as a board, and assumed a deep brown colour. Pork prepared in this manner might be kept in casks a twelvemonth and longer; and when steeped a little while in lukewarm water, it became plump and rosy, yielding, either broiled, boiled, or otherwise dressed, a grateful smell, sufficient to tempt the most languid appetite and please the most delicate palate.

In hunting, they set out at day-break, preceded by the beagles, and followed by their servants with the rest of the dogs; and as they made it a point never to baulk their beagles, they were often led by them over the most frightful precipices, and through places which any other mortal would have deemed absolutely impassable. As soon as the beagles had roused the game, the rest of the dogs struck up and surrounded the beast, stopping it, and keeping a constant barking till the bucanier could get near enough to shoot it, in doing which he commonly aimed at the pit of the breast; and when the beast fell he hamstringed it, to prevent its rising again. But it has sometimes happened that the creature, not wounded enough to tumble to the ground, has run furiously at his pursuer, and ripped him open. In general, however, the bucanier seldom missed his aim; and when he did, he was nimble enough to get up the tree behind which he usually had the precaution to place himself; whilst some of them have been seen to overtake the beast in chase, and hamstring it without any further ceremony.

As soon as the prey was half skinned, the master cut out a large bone, and sucked the marrow for breakfast; leaving the rest to his servants, one of whom always remained behind to finish the skinning, and bring the skin, with a choice piece of meat for the huntsman's dinner. They then continued the chase till they had killed as many beasts as there were heads in the company. The master was the last to return to the boucan, loaded like the rest with a skin and a piece of meat. Here the bucaniers found their tables ready; for every one had his separate table, which was the first thing, any way fit for the purpose, that came in their way, a stone, the trunk of a tree, and the like. No table-cloth, no napkin, no bread or wine, graced their board; not even potatoes, or bananas, unless they found them ready to their hand. When this did not happen, the fat and lean of the game, taken alternately, served to supply the place. A little pimento, and the juice of an orange, formed their only sauce; contentment, peace of mind, a good appetite, and abundance of mirth, made every thing agreeable. Thus they lived and spent their time, till they had completed the number of hides for which they had agreed with the merchants; which done, they carried them to Tortuga, or some port of the great island.

As the bucaniers used much exercise, and fed only on flesh, they generally enjoyed a good state of health. They were indeed subject to fevers; but these were either such

Bucaneer. as lasted only a day, and left no sensible impression the day following, or slight slow fevers, which did not hinder them from action, and were of course so little regarded, that it was usual with the patient, when asked how he did, to answer, "Very well; nothing ails me but the fever." It was impossible, however, that they should not suffer considerably by such fatigues, under a climate to the heat of which few of them had been early enough inured. Hence the most considerate among them, after they had got money enough for that purpose, turned planters;—the rest soon spent the fruits of their labour in taverns and tippling-houses; and many had so habituated themselves to this kind of life, as to become incapable of any other. Nay, there have been instances of young men, who having early embarked through necessity in this painful and dangerous profession, persisted in it afterwards, merely through a principle of libertinism, rather than return to France and take possession of the most plentiful fortunes.

Such were the bucaners of St Domingo, and such was their situation when the Spaniards undertook to extirpate them. And at first the assailants met with great success; for as the bucaners hunted separately, every one attended by his servants, they were easily surprised. Hence the Spaniards killed numbers, and took many more, whom they condemned to a most cruel slavery. But whenever the bucaners had time to put themselves into a state of defence, they fought like lions, to avoid falling into the hands of a nation from whom they were sure to receive no quarter; and by this means they often escaped; nay, there are many instances of single men fighting their way through numbers. These dangers, however, and the success of the Spaniards in discovering their boucans, where they used to surprise and cut the throats of the bucaners and their servants in their sleep, engaged them to cohabit in greater numbers, and even to act offensively, in hopes that by so doing they might at last induce the Spaniards to let them live in peace. But the fury with which they behaved whenever they met any Spaniards served only to make their enemies more intent on their destruction; and assistance coming to both parties, the whole island was turned into a slaughter-house, and so much blood spilt on both sides, that many places, on account of the carnage of which they had been the scenes, were described as the hill of the massacre, the plain of the massacre, the valley of the massacre, and so forth.

At length the Spaniards grew tired of this mode of proceeding, and had recourse to their old method of surprise, which, against enemies of more courage than vigilance, was likely to succeed better. This placed the bucaners under a necessity of never hunting except in large parties, and fixing their boucans in the little islands on the coast, where they retired every evening; an expedient which succeeded very well, and the boucans, by being more fixed, soon acquired the air and consistency of little towns. When the bucaners had once established themselves, as here related, each boucan sent out scouts every morning to the highest part of the island, in order to reconnoitre the coast, and see if any Spanish parties were abroad. If no enemy appeared, they appointed a place and hour of rendezvous in the evening, and were never absent if not killed or made prisoners. When, therefore, any one of the company was missing, it was not lawful for the rest to hunt again till they had got intelligence of him if taken, or avenged his death if killed. Things continued in this situation for a long time, till the Spaniards made a general hunt over the whole island, and, by destroying the game, forced the bucaners to betake themselves to another course of life. Some of them turned planters, and thus increased the French settlements on the coast, or formed others; whilst the rest, not relishing so confined and re-

gular a life, entered among the freebooters, who thereby became a very powerful body. France, which had hitherto disclaimed for her subjects these ruffians, whose successes were only temporary, acknowledged them, however, as soon as they formed themselves into settlements, and took proper measures for their government and defence.

II. *Bucaneers, the Pirates.*—Before the English had effected any settlement in Jamaica, and the French in St Domingo, some pirates of both nations, who were afterwards so much distinguished by the name of *Bucaneers*, had driven the Spaniards out of the small island of Tortuga; and, fortifying themselves there, had with an amazing intrepidity made excursions against the common enemy. They formed themselves into small companies consisting of fifty, a hundred, or a hundred and fifty men each. A boat, of greater or smaller size, was their only armament. Here they were exposed night and day to all the inclemencies of the weather, having scarce room enough to lie down. A love of absolute independence rendered them averse from those mutual restraints which the members of society impose upon themselves for the common good; and as the authority they had conferred on their captain was confined to his giving orders in battle, they lived in the greatest confusion. Like the savages, having no apprehension of want, nor any care to preserve the necessaries of life, they were constantly exposed to the severest extremities of hunger and thirst; but deriving from their very distresses a courage superior to every danger, the sight of a ship transported them to a degree bordering on frenzy. They never deliberated on the attack, but it was their custom to board the ship as soon as possible. The smallness of their vessels, and the skill they showed in the management of them, screened them from the fire of the larger class of ships; and they presented only the fore part of their little vessels filled with fusileers, who fired at the port-holes with so much exactness that it entirely confounded the most experienced gunners. As soon as they threw out the grappling, the largest vessels seldom escaped them.

In cases of extreme necessity they attacked the people of every nation, but fell upon the Spaniards at all times. They thought that the cruelties which the latter had exercised on the inhabitants of the new world justified the implacable aversion they had sworn against them. But this was heightened by the mortification they felt in seeing themselves debarred from the privileges of hunting and fishing, which they considered as natural rights. Their principles of justice and religion in no degree interfered with their predatory habits; for whenever they embarked on any expedition, they used to pray to heaven for the success of it; and they never came back from plundering, without returning thanks to God for their victory.

The ships which sailed from Europe to America seldom tempted their avidity, since the merchandise which these contained could not have been easily sold, nor indeed very profitable to those barbarians. They always waited for them on their return, when they were certain they were laden with gold, silver, jewels, and all the valuable productions of the new world. If they met with a single ship they never failed to attack her. As to the fleets, they followed them till they sailed out of the Gulf of Bahama; and as soon as any one of the vessels was separated by accident from the rest, it was taken. The Spaniards, who trembled at the approach of the bucaners, whom they called devils, immediately surrendered. Quarter was granted if the cargo proved to be a rich one; if not, all the prisoners were thrown into the sea.

The bucaners, when they had got a considerable booty, at first held their rendezvous at the island of Tortuga, in

order to divide the spoil; but afterwards the French went to St Domingo, and the English to Jamaica. Each person, holding up his hand, solemnly protested that he had secreted nothing of what he had taken. If any one among them was convicted of perjury, a case which seldom happened, he was left, as soon as an opportunity offered, upon some desert island, as a traitor unworthy to live in society. Such of their number as had been maimed in any of their expeditions were first provided for. If they had lost a hand, an arm, a leg, or a foot, they received twenty-six pounds; whilst an eye, a finger, or a toe, lost in fight, was valued only at half this sum. The wounded were allowed half a crown per day for two months, to enable them to have their wounds taken care of; and if they had not money enough to answer these several demands, the whole company were obliged to engage in some fresh expedition, and to continue it till they had acquired a sufficient stock to enable them to satisfy these honourable contracts. The remainder of the booty was then divided into as many shares as there were bucaners. The commander could only lay claim to a single share; but they complimented him with two or three, in proportion as he had acquitted himself to their satisfaction. Favour never had any influence in the division of the booty, for every share was determined by lot. The most rigid justice was extended even to the dead. Their share was given to the man who was known to be their companion when alive, and therefore accounted their heir. If the person who had been killed had no intimate, his portion was sent to his relations when they were known; and if there were no friends or relations, it was distributed in charity to the poor, and to the churches, which consented to offer up prayers for the person in whose name these benefactions were given.

When these duties had been complied with, they then indulged themselves in all kinds of profusion. Unbounded licentiousness in gaming, wine, women, and every kind of debauchery, was carried to the utmost pitch of excess, and was stopt only by the want which such profusion brought on. Those who had been enriched with several millions were in an instant totally ruined, and rendered destitute of clothes and provisions. They returned to sea; and the new supplies which they acquired were soon lavished in the same manner as before.

The Spanish colonies, flattering themselves with the hope of seeing an end to their miseries, and reduced almost to despair at finding themselves a perpetual prey to these ruffians, grew weary of navigation. They gave up all the power, conveniences, and fortune, which their connections procured them, and formed themselves into so many distinct and separate associations. They were sensible of the great inconvenience arising from such a conduct, and avowed it; but the dread of falling into the hands of rapacious and savage men had greater influence over them than the dictates of honour, interest, and policy. This gave rise to that spirit of inactivity which continues to the present time, notwithstanding the agitating events of which that quarter of the world has since been the theatre.

The despondency thus produced served only to increase the boldness of the bucaners. As yet they had only appeared in the Spanish settlements in order to carry off provisions when in want of them. But they no sooner found their captures begin to diminish, than they determined to recover by land what they had lost at sea. The richest and most populous countries of the continent were plundered and laid waste. The culture of lands was as much neglected as navigation; and the Spaniards dared no more appear in their public roads, than sail in the latitudes which belonged to them.

Among the bucaners who signalized themselves in this

new species of freebooting, Montbar, a gentleman of Landruedoc, particularly distinguished himself. Having by chance, in his infancy, met with a circumstantial account of the cruelties practised in the conquest of the New World, he conceived an aversion, which he carried to a degree of frenzy, against that nation which had committed such enormities. The enthusiasm which this spirit of humanity worked him up to merged in a ferocity still more cruel than that of the religious fanaticism to which so many victims had been sacrificed. The manes of these unhappy sufferers seemed to rouse him, and call for vengeance. He had heard some account of the bucaners, who were said to be the most inveterate enemies to the Spanish name; and he therefore embarked, with some others, on board a ship in order to join them.

In the passage they met with a Spanish vessel, attacked, and, as was usual in those times, immediately boarded it. Montbar, with a sabre in his hand, fell upon the enemy, broke through them, and, hurrying twice from one end of the ship to the other, levelled every thing that opposed him. When he had compelled the enemy to surrender, leaving to his companions the happiness of dividing so rich a booty, he contented himself with the savage pleasure of contemplating the dead bodies of the Spaniards, against whom he had sworn a constant and deadly hatred.

Fresh opportunities soon occurred which enabled him to exercise this spirit of revenge without extinguishing it. The ship which conveyed him arrived on the coast of St Domingo, where the bucaners on land immediately applied to barter provisions for brandy. As the articles they offered were of little value, they alleged in excuse that their enemies had overrun the country, laid waste their settlements, and carried off all their property. "Why," replied Montbar, "do you tamely suffer such insults?" "Neither do we," answered they; "the Spaniards have experienced what kind of men we are, and have therefore taken advantage of the time when we were engaged in hunting; but we are going to join some of our companions who have been still worse treated than we, and then we shall have warm work." "If you approve of it," answered Montbar, "I will head you, not as your commander, but as the foremost to expose myself to danger." The bucaners perceiving from his appearance that he was the very man they wanted, cheerfully accepted his offer; and the same day they overtook the enemy, when Montbar attacked them with an impetuosity that astonished the bravest, and scarce one Spaniard escaped the effects of his fury. The remaining part of his life was equally distinguished as this day. The Spaniards suffered so much from him, both by sea and land, that he acquired the name of the *Exterminator*.

His savage disposition, as well as that of the other bucaners who attended him, having obliged the Spaniards to confine themselves within their settlements, the freebooters resolved to attack them there. This new method of carrying on the war required superior forces; and their associations in consequence became more numerous. The first considerable one was that formed by L'Olonois, who derived his name from the sands of Olones, the place of his birth. From the abject state of a bondsman, he had gradually raised himself to the command of two canoes, with twenty-two men; and with these he was so successful as to take a Spanish frigate on the coast of Cuba. He then repaired to Port-au-Prince, in which were four ships, fitted out purposely to sail in pursuit of him; but he took them, and threw all the crews into the sea except one man, whom he saved in order to send him with a letter to the governor of the Havannah, acquainting him with what he had done, and assuring him that he would treat in the same manner all the Spaniards who should fall into his hands, not excepting the governor himself if he were for-

Bucaneer. fortunate enough to take him. After this expedition he ran his canoes and prize ships aground, and sailed with his frigate only to the island of Tortuga.

At Tortuga he met with Michael de Basco, who had distinguished himself by taking, even under the cannon of Porto Bello, a Spanish ship, estimated at L.218,500, and by other actions equally brave and daring. These two gave out that they were going to embark together on an expedition equally glorious and profitable; and in consequence they soon collected together four hundred and forty men. This body of men, the most numerous which the bucaners had yet been able to muster, sailed to the Bay of Venezuela, which runs up into the country for the space of about fifty leagues. The fort which was built at the entrance for its defence was taken; the cannon were nailed up; and the whole garrison, consisting of two hundred and fifty men, were put to death. They then re-embarked and came to Maracaybo, built on the western coast of the lake of the same name, at the distance of ten leagues from its mouth. This city, which had become flourishing and rich by its trade in skins, tobacco, and cocoa, was deserted; and the inhabitants had retired with their effects to the other side of the bay. If the bucaners had not lest a fortnight in riot and debauchery, they would have found at Gibraltar, near the extremity of the lake, every thing which the inhabitants had secreted, to secure it from being plundered. On the contrary they met with fortifications lately erected, which they had the bootless satisfaction of making themselves masters of at the expense of a great deal of blood; for the inhabitants had already removed to a distance the most valuable part of their property. Exasperated at this disappointment, they set fire to Gibraltar; and Maracaybo would have shared the same fate had it not been ransomed. Besides the sum which they received for its ransom, they also carried off all the crosses, pictures, and bells of the churches; intending, as they said, to build a chapel in the island of Tortuga, and to consecrate this part of their spoils to sacred purposes. Such was the religion of these barbarous people, who could make no other offering to heaven than that which arose from their robberies and plunder.

But while they were idly dissipating the spoils which they had made on the coast of Venezuela, Morgan, the most renowned of the English bucaners, sailed from Jamaica to attack Porto Bello. His plan of operations was so well contrived that he surprised and took the city without opposition. The conquest of Panama was an object of much greater importance. To secure this Morgan thought it necessary to sail in the latitudes of Costa-Rica, in order to procure some guides in the island of St Catharines, where the Spaniards confined their malefactors. This place was so strongly fortified that it might to have held out for ten years against a considerable army. But notwithstanding this, the governor, on the first appearance of the pirates, sent privately to concert measures how he might surrender himself without incurring the imputation of cowardice; and the result of this consultation was, that Morgan in the night-time was to attack a fort at some distance, while the governor was to sally out of the citadel to defend a post of so much consequence, and that the assailants should then attack him in the rear, and take him prisoner, which would occasion an immediate surrender of the place. It was agreed that a smart firing should be kept up on both sides, without doing mischief to either. This farce was admirably carried on. The Spaniards, without being exposed to any danger, appeared to have done their duty; and the bucaners, after having totally demolished the fortifications, and put on board their vessels a prodigious quantity of warlike ammunition, which they found at St Catharines, steered their course towards the river Chagre, the only

channel whereby they could arrive at the place which was the object of their wishes.

At the entrance of this considerable river a fort had been built upon a steep rock, which the waves of the sea constantly beat against. This bulwark, naturally difficult of access, was defended by an officer whose extraordinary abilities were equal to his courage, and by a garrison which was in all respects worthy of such a commander. Here the bucaners, for the first time, met with a resistance which could only be equalled by their perseverance; and it was a doubtful point whether they should succeed or be obliged to raise the siege, when a lucky accident happened which proved favourable to their glory and their fortune. The commander was killed, and the fort accidentally took fire; upon which the besiegers, taking advantage of this double calamity, made themselves masters of the place.

Morgan left his vessels at anchor, with a sufficient number of men to guard them, and sailed up the river in his sloops for thirty-three miles, till he came to Cruces, where it ceases to be navigable; and he then proceeded by land to Panama, which was only five leagues distant. Upon a large and extensive plain which stretched out before the city, he met with a considerable body of troops, whom he put to flight with the greatest ease, and entered the city, which was now abandoned. Here were found prodigious treasures concealed in the wells and caves; some valuable commodities were also taken in the boats which were left aground at low water; and in the neighbouring forests were likewise found several rich deposits. Having burnt the city, they set sail with a great number of prisoners, who were ransomed a few days afterwards, and arrived at the mouth of the Chagre with a prodigious booty.

In 1603 an expedition of the greatest consequence was formed by Van Horn, a native of Ostend, but who had served all his life among the French. His own intrepidity prevented his tolerating the least signs of cowardice amongst those who associated with him. In the heat of an engagement he went about his ship, observed his men in succession, and immediately killed those who shrunk at the sudden report of a pistol, gun, or cannon. This extraordinary discipline rendered him the terror of the coward and the idol of the brave. In other respects he readily shared with the men of spirit and bravery the immense riches which were acquired in the course of his marauding expeditions. When he went upon such expeditions, he generally sailed in his frigate, which was his own property. But his designs requiring greater numbers to carry them into execution, he called to his assistance Grammont, Godfrey, and Jonqué, three Frenchmen distinguished by their exploits, and Lawrence de Graff, a Dutchman, who had signalized himself still more than they. Twelve hundred bucaners joined themselves to these commanders, and sailed in six vessels for Vera Cruz.

The darkness of the night favoured their landing, which was effected about three leagues from the place, where they arrived without being discovered. The governor, the fort, the barracks, and the posts of the greatest consequence, every thing, in short, which could occasion any resistance, were taken by the break of day. All the citizens, men, women, and children, were shut up in the churches, whither they had fled for shelter. At the door of each church were placed barrels of gunpowder to blow up the building; and a bucaner, with a lighted match, was to set fire to it upon the least appearance of an insurrection.

While the city was kept in this state of terror, it was easily pillaged; and after the bucaners had carried off whatever was most valuable, they made a proposal to the citizens who were kept prisoners in the churches to ransom their lives and liberties by a contribution of L.437,500. This unfortunate people, who had neither eaten nor drunken for

three days, cheerfully accepted the terms which were offered them. Half of the money was paid the same day, and the other part was expected from the interior of the country, when there appeared on an eminence a considerable body of troops advancing, and near the port a fleet of seventeen ships from Europe. At the sight of this armament, the bucaners, without any marks of surprise, retired quietly, with fifteen hundred slaves they had seized, as a trifling indemnification for the rest of the money they expected, the settling of which they referred to a more favourable opportunity. Their retreat was equally daring. They boldly sailed through the midst of the Spanish fleet, which let them pass without firing a single gun, and, in fact, seemed afraid of being attacked and beaten. The Spaniards would not probably have escaped so easily, if the vessels of the pirates had not been laden with silver, or if the Spanish fleet had been freighted with any other effects but such merchandise as was little valued by these daring freebooters.

A year had scarcely elapsed since their return from Mexico, when, on a sudden, they were all seized with a passion for going to plunder Peru. It is probable that the hopes of finding greater treasures upon a sea little frequented, than on one long exposed to piracies of this kind, was the cause of this expedition; but it is somewhat remarkable, that both the English and French, and the associations of these two nations, had projected this plan at the same time, without any communication, intercourse, or design of acting in concert with each other. About four thousand men were employed in this expedition. Some of them proceeded by Terra Firma, others by the Straits of Magelhaens, to the place which formed the object of their wishes; and if the intrepidity of these barbarians had been directed, under the influence of a skilful commander, to a single end, it is certain that they would have deprived the Spaniards of this important colony. But their natural character presented an invincible obstacle to so rare a union; for they always formed themselves into several distinct bodies, sometimes even so few in number as ten or twelve, who acted together, or separated, as whim or caprice dictated. Grogner, Lecuyer, Picard, and Le Sage, were the most distinguished officers among the French; David Samms, Peter Wilner, and Towley, among the English.

Such of these adventurers as had got into the South Sea by the Straits of Darien seized upon the first vessel which they found upon the coast; and their associates, who had sailed in their own vessels, were not much better provided. Weak, however, as they were, they several times beat the squadrons which were fitted out against them. But these victories were prejudicial to them, by interrupting their navigation; and when there were no more ships to be taken, they were continually obliged to make descents upon the coasts to get provisions, or to go by land in order to plunder those cities where the booty had been secured. They successively attacked Seppa, Puebla-Nuevo, Leon, Realejo, Puebla-Viejo, Chiriquita, Lesparso, Granada, Villia, Nicoy, Tecoanteca, Mucmeluna, Chiloteca, New Segovia, and Guayaquil, the most considerable of all these places.

Many of these places were taken by surprise, and most of them deserted by their inhabitants, who fled at the sight of the enemy. As soon as the bucaners took a town, it was directly set on fire, unless a sum proportioned to its value was paid to save it. The prisoners taken in battle were massacred without mercy if they were not ransomed by the governor or some of the inhabitants; while gold, pearls, or precious stones, were the only things accepted of for the payment of their ransom. Silver being too common, and too weighty for its current value, would have been troublesome to them. The chances of fortune, which

seldom leave guilt unpunished, or adversity without a compensation for its suffering, atoned for the crimes committed in the conquest of the New World; and the Indians were amply avenged on the Spaniards.

While such piracies were being committed on the Southern Ocean, the Northern was threatened with the same by Grammont. He was a native of Paris, by birth a gentleman, and had distinguished himself in a military capacity in Europe; but his passion for wine, gaming, and women, had obliged him to join the pirates. Nevertheless he was affable, polite, generous, and eloquent; endued with a sound judgment, and a person of approved valour; qualities which soon made him be considered as the chief of the French bucaners. As soon as it was known that he had taken up arms, he was immediately joined by a number of brave men. The governor of St Domingo, who had at length prevailed upon his master to approve of the project, equally wise and just, of fixing the pirates in some place, and inducing them to become cultivators, was desirous of preventing the concerted expedition, and forbade it in the king's name. But Grammont, who had a greater share of sense than his associates, was not on that account inclined to comply, and sternly replied, "How can Louis disapprove of a design he is unacquainted with, and which has been planned only a few days ago?" This answer highly pleased all the bucaners, who directly embarked in 1685 to attack Campeachy.

They landed without opposition. But at some distance from the coast they were attacked by eight hundred Spaniards, who were beaten and pursued to the town, which both parties entered pell-mell together. The cannon they found there were immediately levelled against the citadel; but as these had very little effect, they were contriving some stratagem to enable them to become masters of the place, when intelligence was brought that it had been abandoned. There remained in it only a gunner, an Englishman, and an officer of signal courage, who chose rather to expose himself to the greatest extremities than basely to fly from the place with the rest. The commander of the bucaners received him with marks of distinction, generously released him, gave him up all his effects, and, besides, complimented him with some valuable presents; such influence have courage and fidelity even on the minds of those who systematically violate all the rights of society.

The conquerors of Campeachy spent two months in searching the environs of the city to the extent of twelve or fifteen leagues, and in carrying off every thing which the inhabitants in their flight thought they had preserved. When all the treasure they had collected from every quarter was deposited in the ships, a proposal was made to the governor of the province, who still kept the field with nine hundred men, to ransom his capital city. His refusal determined them to burn it, and demolish the citadel. The French, on the festival of St Louis, were celebrating the anniversary of their king; and in the transports of their patriotism, intoxication, and national love of their prince, they burnt to the value of a million of logwood; a part, and a very considerable one too, of the spoil which they had made. After this singular and extravagant instance of folly, of which Frenchmen only would boast, they returned to St Domingo.

In 1697 twelve hundred bucaners were induced to join a squadron of seven ships which sailed from Europe under the command of one Pointis, to attack the famous city of Carthagena. This was the most difficult enterprise which could be attempted in the New World. The situation of the port, the strength of the place, and the badness of the climate, were so many obstacles which would have seemed insurmountable to any but such men as the bucaners. But every obstacle yielded to their valour and

Bucarest
||
Buccari.

good fortune; the city was taken, and booty gained to the amount of L.1,750,000. Their rapacious commander, however, deprived them of the advantages resulting from their success. He scrupled not, as soon as they set sail, to offer L.5250 for the share of those who had been the chief instruments in procuring him so considerable a spoil.

The bucaners, exasperated at this treatment, resolved immediately to board the vessel called the Sceptre, where Pointis himself was, and which at that time was too far distant from the rest of the ships to expect to be assisted by them. And this avaricious commander was upon the point of being massacred, when one of the malcontents cried out, "Brethren, why should we attack this rascal? He has carried off nothing that belongs to us. He has left our share at Carthage, and there we must go to recover it." This proposal was received with general applause. A savage joy at once succeeded the gloomy melancholy which had seized them; and without further deliberation all their ships sailed towards Carthage.

As soon as they had entered the city without meeting with any resistance, they shut up all the men in the great church, and exacted payment of L.218,750, the amount of their share of booty which they had been defrauded of, promising to retreat immediately upon compliance with their demand, but threatening the most dreadful vengeance in case of refusal. Upon this the most venerable priest in the city mounted the pulpit, and made use of the influence which his character, his authority, and his eloquence gave to him, to persuade his hearers to yield up without reserve all the gold, silver, and jewels in their possession. But the collection made after the sermon not furnishing the sum required, the city was ordered to be plundered.

At length, after amassing all they could, these adventurers set sail, when unfortunately they met with a fleet of Dutch and English ships, then in alliance with Spain. Several of the pirates were either taken or sunk, with the cargoes they had on board; and the rest escaped to St Domingo.

Such was the last memorable event in the history of the bucaners. The separation of the English and French, when the war on account of the Prince of Orange divided the two nations; the success of the means employed to promote the cultivation of land among their colonies, by the assistance of these enterprising men; the prudence evinced in selecting the most distinguished among them, and intrusting them with civil and military employments; and the protection afforded to the Spanish settlements, which till then had been a general object of plunder; all these circumstances, and various others, besides the impossibility of supplying the place of these remarkable men, who were continually dropping off, concurred to put an end to a society as extraordinary as any that ever existed. Without any regular system, without laws, without subordination, and even without any fixed revenue, they became the astonishment of the age in which they lived, as they will be also of posterity.

BUCAREST, or BUCHAREST, a city in the district of Ilfow, and the capital of the province of Wallachia. It is situated on a fine and extensive plain, upon the banks of the Dumbowitza, which falls into the Danube above the fortress of Silistria. It is the seat of a Greek archbishop, and contains sixty churches of that communion, and also twenty monasteries. It is an ill-built town, the streets being paved with trees, and excessively filthy. There is a Greek college, with twelve professors and two hundred and sixty students. There are some manufactures, and considerable domestic trade. The inhabitants are stated to be between 50,000 and 60,000. Long. 27. 2. 10. E. Lat. 44. 26. 45. N.

BUCCARI, a city in the Austrian province of Trieste,

and circle of Montano. It is a well-frequented port for small vessels, being situated on a bay of the same name in the Gulf of Quarano. It has considerable traffic in wine and in wood, and a tunny fishery. The inhabitants are about 2000. Long. 14. 26. 12. E. Lat. 45. 18. N.

BUCELLARI, an order of soldiery under the Greek emperors, appointed to guard and distribute the ammunition bread; though authors are somewhat divided as to their office and quality. Among the Visigoths bucellarius was a general name for a client or vassal who lived at the expense of his lord. Some give the denomination to parasites in the courts of princes; others make them the body-guards of emperors; and others, again, fancy they were only such as emperors employed in putting persons to death privately.

BUCELLATUM, among ancient military writers, denotes camp-bread, or biscuit baked hard and dry, both for lightness and keeping. Soldiers always carried with them enough for a fortnight, and sometimes much longer, during the time that military discipline was kept up.

BUCCINA, an ancient musical and military instrument. It is usually taken for a kind of trumpet; which opinion is confirmed by Festus, by his defining it a crooked horn, played on like a trumpet. Vegetius observes, that the buccina was bent in a semicircle, in which respect it differed from the tuba or trumpet. It is very difficult to distinguish it from the cornu or horn, unless it was something smaller, and not quite so crooked; yet it certainly was of a different species, because we never read of the cornu in use with the watch, but only the buccina. Besides, the sound of the buccina was sharper, and to be heard much farther than either the cornu or the tuba. In Scripture, a similar instrument, used both in war and in the temple, was called *rams-horns*, *kiren jobel*, and *sepheroth hagjobelim*.

This instrument was in use among the Jews to proclaim their feast-days, new moons, jubilees, sabbatical years, and the like. At Lacedæmon, notice was given by the buccina when it was supper time; and the like was done at Rome, where the grandes had a buccina blown both before and after they sat down to table. The sound of the buccina was called *buccinus*, or *bucinus*; and the musician who played on it was called *buccinator*.

BUCCINO, a city in the province Principato-Citeriore of the kingdom of Naples. It stands on the river Botta, at its junction with the Negro, over which is an antique Roman bridge. It contains 5320 inhabitants.

BUCENTAUR, a large galley of the doge of Venice, adorned with fine pillars on both sides, and gilt over from the prow to the stern. This vessel was covered over head with a kind of tent, made of purple silk. In it the doge received the great lords and persons of quality who visited Venice, accompanied with the ambassadors and counsellors of state, and all the senators, on benches by him. The same vessel served also in the magnificent ceremony of Ascension-day, on which the doge threw a ring into the sea to espouse it, and to denote his dominion over the Gulf of Venice.

BUCEPHALA, or BUCEPHALOS, in *Ancient Geography*, a town built by Alexander, on the western side of the Hydaspis, a river of India Citerior, so called in memory of his horse Bucephalus.

BUCKER, MARTIN, one of the first authors of the Reformation at Strasburg, was born in 1491, in Alsace, and took the religious habit of St Dominic at seven years of age; but meeting afterwards with the writings of Martin Luther, and comparing them with the Scriptures, he began to entertain doubts concerning several things in the Roman Catholic religion. After some conferences with Luther at Heidelberg in 1521, he adopted most of his sentiments; but in 1532 he gave the preference to those of

Zuinglius. He assisted in many conferences concerning religion; and in 1548, he was sent for to Augsburg to sign the agreement, called the *interim*, between the Papists and Protestants. His warm opposition to this project exposed him to many difficulties and hardships; the news of which reaching England, where his fame had already arrived, Cranmer, archbishop of Canterbury, gave him an invitation to come over, which he readily accepted. In 1549 a handsome apartment was assigned him in the University of Cambridge, and a salary to teach theology. King Edward VI. had the greatest regard for him. Being told that he was very sensible of the cold of the climate, and suffered much for want of a German stove, he sent him a hundred crowns to purchase one. Bucer died of a complication of disorders in 1551, and was buried at Cambridge with great funeral pomp. Five years afterwards, in the reign of Queen Mary, his body was dug up and publicly burnt, and his tomb demolished; but it was subsequently re-constructed by order of Queen Elizabeth.

BUCHAN, a district of Scotland, lying partly in the shire of Aberdeen and partly in that of Banff. It gives the title of earl to the noble and ancient family of Erskine.

BUCHANAN, GEORGE, one of the most illustrious characters of the sixteenth century, was born about the beginning of February in the year 1506. His father was Thomas, the second son of Thomas Buchanan of Drumikill; his mother Agnes Heriot, of the family of Traboun. The house from which he descended he has himself characterized as more remarkable for its antiquity than for its opulence. Thomas Buchanan the younger obtained from his father a grant of the farm of Mid-Leowen, or, as it is more commonly called, the Moss, situated in the parish of Killearn and county of Stirling. He died of the stone at a premature age; and, about the same period, the poet's grandfather found himself in a state of insolvency. The family, which had never been opulent, was thus reduced to extreme poverty: but his mother struggled hard with the misery of her condition; and all her children, five sons and three daughters, arrived at the age of maturity. In the year 1531, a lease of two farms near Cardross was granted by Robert Erskine, commendator of Dryburgh and Inchmahome, to her and three of her sons, Patrick, Alexander, and George. One of her daughters appears to have married a person of the name of Morison; for Alexander Morison, the son of Buchanan's sister, published an edition of his uncle's paraphrase of the Psalms. Her third son, whose extraordinary attainments have rendered the family illustrious, is reported by oral tradition to have been indebted for the rudiments of learning to Killearn school, which long continued to maintain a considerable reputation. Mid-Leowen, which stands on the banks of the Blane, is situated at the distance of about two miles from the village; and it may be conjectured that the future poet and statesman daily walked to school, and carried along with him his homely repast. Dr Mackenzie, whose authority is extremely slender, asserts that he was partly educated at the school of Dunbarton. His very promising talents recommended him to the favour and protection of his maternal uncle, James Heriot, who, apparently in the year 1520, sent him to prosecute his studies in the university of Paris. It was here that he began to cultivate his poetical talents; partly impelled, as he informs us, by the natural temperament of his mind, partly by the necessity of performing the usual exercises prescribed to younger students. Some of the French writers most capable of estimating his attainments, have not neglected to record his obligations to their country: Vavasour has remarked that, although a Scotchman by birth, he might well pass for a French poet, since all that he knew of polite literature, and particularly of poetry,

he had acquired in France. Buchanan did not profess to be one of those bright geniuses who can master a new language every six weeks; he incidentally states that his knowledge of Latin was the result of much youthful labour. The Greek tongue, in which he likewise attained to proficiency, he acquired without the aid of a preceptor. The current speech of his native district at that period may be supposed to have been Gaelic. Of this language it is at least certain that he possessed some knowledge; and an anecdote has been related which at once confirms this supposition, and illustrates his peculiar vein of humour. When in France, having met with a woman who was said to be possessed with the devil, and who professed to speak all languages, he accosted her in Gaelic: as neither she nor her familiar returned any answer, he took a protest that the devil was ignorant of that tongue.

Within the space of two years after his arrival in Paris, his uncle died, and left him exposed to want in a foreign country: his misery was increased by a violent distemper, which had perhaps been occasioned by poverty and mortification; and in this state of hopeless languor he returned to Scotland at the critical age of sixteen. Having devoted the best part of a year to the recovery of his health, he next assumed the character of a soldier, and served along with the auxiliaries whom the duke of Albany had conducted from France. The Scottish forces, commanded by the regent in person, marched towards the borders of England, and, about the end of October 1523, laid siege to the castle of Werk. The auxiliaries carried the exterior wall by assault, but could not long occupy the station which they had gained. The large area between the two ramparts, intended as a receptacle, during the time of war, for the cattle and stores of the neighbouring peasantry, was at this crisis replenished with materials of a combustible nature; and when the garrison found themselves repulsed by the French soldiers, they set fire to the straw, and speedily expelled their enemies by the flames and smoke. During the two following days, the assailants persisted in battering the inner wall: when they had effected a sufficient breach, the French soldiers again rushed to the attack, and surmounted the ruins; but they were so fiercely assaulted by missile weapons from the inner tower, which was yet entire, that after having sustained some loss, they were compelled to retreat, and repassed the Tweed. The duke, finding his native troops disaffected, and the army on the English frontier too formidable from its numbers, removed his camp on the 11th of November; and as he marched towards Lauder after midnight, his army was terribly annoyed by a sudden storm of snow.

Buchanan, who belonged to a fierce and warlike nation, seems to have caught some portion of the military ardour. It was his youthful curiosity respecting the profession of arms which had thus prompted him to mingle in danger; and he was persuaded that there is a very close affinity between the studies of literature and of war. In his history of Scotland, written at an advanced age, he often describes feats of chivalry with great animation. But his experience in the course of this inglorious campaign did not render him more enamoured of a military life: the hardships which he had undergone reduced him to his former state of languor; and during the rest of the winter he was confined to bed. In the beginning of the ensuing spring, when he had completed the eighteenth year of his age, he was sent to the university of St Andrews, where he and his brother Patrick were at the same time matriculated in what was then called the Pedagogy, and afterwards St Mary's College. On the 3d of October 1525 George Buchanan took the degree of A. B.; and it

Buchanan appears from the faculty register that he was then a *pauper* or exhibitioner. In this college logic was then taught by John Mair, a celebrated doctor of the Sorbonne. Buchanan informs us that it was to hear his prelections that he had been sent to St Andrews, and that he afterwards followed Mair to France. It has been very confidently stated, that he was now a dependent on the bounty of this venerable commentator on Peter of Lombardy; and if the fact could be established by any competent evidence, the character of Buchanan must be subjected to severe reprehension; for he mentions his supposed benefactor in terms which convey no suggestion of gratitude. Of this generous patronage, however, there is not even the faintest shadow of evidence; and such a tale manifestly originated from the misinterpretation of a very unequivocal passage in Buchanan's account of his own life.

Upon his return to France, he became a student in the Scottish College of Paris. On the 10th of October 1527, he was incorporated as A. B., and he took the degree of A. M. next March. During the year 1529, he was a candidate for the office of procurator of the German nation; but his purblind countryman Robert Wauchope, who was afterwards titular archbishop of Armagh, and who sat in the council of Trent, was then elected for the ninth time. Buchanan was thus repulsed on the fifth of May, but on the third of June 1530 he was more successful. Before this period, the tenets of Luther had begun to be widely disseminated, and Buchanan was now added to the number of his converts. Having for the space of two years continued to struggle with the iniquity of fortune, he was appointed a regent or professor in the College of St Barbe, where he taught grammar for about three years. His eminent qualifications for such an employment will not be questioned, but his services do not seem to have procured him any splendid remuneration: in an elegy, apparently composed about this period of his life, he exhibits a dismal picture of the miseries to which the Parisian professors of humanity were then exposed. His appointment seems to have taken place in the year 1529. Gilbert Kennedy, earl of Cassillis, who was residing near this college, having become acquainted with Buchanan, admired his literary talents, and was delighted with his conversation: he was therefore solicitous to retain so accomplished a preceptor; and their closer connexion probably commenced in the year 1532. The first work that Buchanan committed to the press was a translation of the famous Thomas Linacre's rudiments of Latin grammar; which he inscribed to Lord Cassillis, "a youth of the most promising talents, and of an excellent disposition." This Latin version was printed at Paris in 1533.

After he had resided with his pupil for five years, they both returned to Scotland. At this period the earl had reached the age of majority; and Buchanan might only embrace a favourable opportunity of revisiting his relations and friends. Their connexion however was not immediately dissolved. While he was residing at the earl's seat in Ayrshire, he composed a little poem which rendered him extremely obnoxious to the ecclesiastics. In this poem, which bears the title of *Somnium*, and is a happy imitation of Dunbar, he expresses his own abhorrence of a monastic life, and stigmatizes the impudence and hypocrisy of the Franciscan friars. It was his original intention to resume his former occupations in France, but James the Fifth retained him in the capacity of preceptor to one of his natural sons. This son was not, as has generally been supposed, the celebrated James Stewart, who afterwards became regent of the kingdom, but another who bore the same baptismal name. His mother was Elizabeth Shaw, of the family of Sauchie; and he died in the year 1548. It was perhaps in the year 1537 that

Buchanan entered upon his new charge; for in the course of that year the king made an arrangement with respect to his four sons. The abbacies of Melrose and Kelso were secured in the name of Buchanan's pupil, who was the eldest. The preferment of a profane scoffer at priests must have augmented the spleen of the clergy; and the Franciscan friars, still smarting from his *Somnium*, found means of representing him to the king as a man of depraved morals and of dubious faith. But James had formerly begun to discover their real character; and the part which he supposed them to have acted in a late conspiracy against his own life, had not contributed to diminish his antipathy. Instead of consigning the poet to disgrace or punishment, the king, who was aware that private resentment would improve the edge of his satire, enjoined him in the presence of many courtiers to renew his well-directed attack on the same pious fathers. He accordingly applied himself to the composition of the poem afterwards published under the title of *Franciscanus*; and, to satisfy the king's impatience, soon presented him with a specimen. This production, as it now appears in its finished state, may be pronounced one of the most pungent satires which any language can exhibit. No class of men was ever more completely exposed to ridicule and infamy; nor is it astonishing that the popish clergy afterwards regarded the author with implacable hatred.

But the church being infallible, he speedily recognized the danger of accosting its retainers by their proper names. At the beginning of the year 1539, many individuals suspected of Lutheranism were involved in the horrors of persecution. Towards the close of February, five were committed to the flames, nine made a formal recantation of their supposed errors, and many were driven into exile. Buchanan had been comprehended in this general arrest; and after he was committed to custody, Cardinal Beaton endeavoured to accelerate his doom by tendering to the king a sum of money as the price of his blood. Of this circumstance Buchanan was apprized by some of his friends at court; and his knowledge of the king's rapacity must have augmented all the terrors of his situation. Stimulated by the thoughts of increasing danger, he made his escape through the window of the apartment in which he was confined; but he had soon to encounter new disasters. When he reached the frontier of the two kingdoms, he was molested by the freebooters, who at that time were its sole inhabitants; and his life was again exposed to jeopardy from the contagion of a pestilential disease, which then raged in the north of England. On his arrival in London, he experienced the friendship of Sir John Rainsford, an English knight, who is mentioned as the only person that protected him against the fury of the papists. He met with no particular inducement to continue his residence in England, which was then governed by an atrocious tyrant. The civilization of France, as well as the particular intimacies which he had formed in that country, led him to adopt the resolution of returning to Paris: but, on his arrival, he found that Cardinal Beaton was residing there in the capacity of an ambassador; and his friend Andrew Govea, a native of Portugal, having invited him to Bordeaux, he did not hesitate to embrace such an opportunity of removing himself beyond the reach of the cardinal's deadly hatred. Of the College of Guienne, lately founded in that city, Govea had been nominated principal; and Buchanan, evidently on his recommendation, was now appointed one of the professors. Here he must have fixed his residence before the close of the year; for to Charles the Fifth, who made his solemn entry into Bordeaux on the first of December 1539, he presented a poem in the name of the college.

The task assigned him at Bordeaux was that of teach-

ing the Latin language. For an occupation of this kind he seems to have entertained no particular affection; but although sufficiently laborious, it never impaired the native elevation of his mind. His poetical studies he now prosecuted with great ardour; during the three years of his residence at Bordeaux, he completed four tragedies, together with various other poems. The earliest of his dramatic compositions bears the title of *Baptistes*. He had applied himself to the study of the Greek language without the aid of a preceptor, and as a useful exercise had executed a translation of the *Medea* of Euripides. This version he now delivered to the academical stage, and afterwards suffered it to be printed. Those two tragedies were performed with a degree of applause which almost exceeded his hopes. He afterwards completed his *Jephthes*, and translated *Alceste*, another drama of his favourite poet. These last productions, as he originally intended them for publication, were elaborated with superior diligence. The tragedy of *Jephthes* is conformable to the models of the Grecian theatre, and is not destitute of interest. The subject is highly dramatic; it is a subject which his great exemplar Euripides might have been inclined to select. The situation of a father who had unwarily subjected himself to the dreadful necessity of sacrificing a beloved and only child, the repugnant and excruciating sensations of the mother, the daughter's mingled sentiments of heroism and timidity, are delineated with considerable felicity of dramatic conception. The tender or pathetic was not however the peculiar province of Buchanan, whose talents were bold, masculine, and commanding. The *Baptistes*, although inferior to the other tragedy in dramatic interest, is more strongly impregnated with the author's characteristic sentiments. Its great theme is civil and religious liberty; and against tyranny and priestcraft the poet frequently expresses himself with astonishing boldness. Some of his allusions bear a very easy application to the late conduct of Cardinal Beaton. In the tragedies of the ancient Greek poets, what is termed the prologue is always an essential part of the drama; but the prologue of the *Baptistes* resembles those of Terence. Buchanan seems to have adopted this model, because it afforded him a better opportunity of preparing his auditors for the bold sentiments which they were about to hear.

During the term of his residence in the College of Guienne, the satirist of the Scottish clergy did not find himself totally secure from danger. The cardinal, in a letter addressed to the archbishop of Bordeaux, requested him to secure the person of the heretical poet; but as his letter had been entrusted to the care of some individual much interested in the welfare of Buchanan, he was suffered to remain without molestation. Still however he found himself annoyed by the threats of the cardinal and the grey friars; but the death of King James, and the appearance of a dreadful plague in Guienne, alleviated his former apprehensions. Having resided three years at Bordeaux, he returned to Paris. In 1544 he was officiating as a regent in the college of Cardinal le Moine; and he apparently retained the same station till 1547. About this period he was miserably tormented with the gout. The ardour of his fancy was however undiminished: in an interesting elegy, composed in 1544, and addressed to his late colleagues Tastæus and Tevius, he exhibits a dismal picture of his own situation, and gratefully commemorates the assiduous attentions of his present colleagues Turnebus and Gelida. It is remarked by a French historian, that three of the most learned men in the world then taught humanity in the same college. The first class was taught by Turnebus, the second by Buchanan, and the third by Muretus.

The king of Portugal had recently founded the university of Coimbra; and as his own dominions could not afford a sufficient supply of able professors, he invited Andrew Govea to preside over the new institution, and to conduct from France a considerable number of proficients in philosophy and ancient literature. Govea accordingly returned to his native country in the year 1547, accompanied by Buchanan and other associates. The affairs of Europe presented an alarming aspect; and Portugal seemed to be almost the only corner free from tumults. To the proposals of Govea he had not only lent a willing ear, but was so much satisfied with the character of his associates, that he also persuaded his brother Patrick to join this famous colony. To several of its members he had formerly been attached by the strictest ties of friendship; these were Gruchius, Garentæus, Tevius, and Vinetus, who have all distinguished themselves by the publication of learned works. The other scholars of whom it consisted were Arnoldus Fabricius, John Costa, and Anthony Mendez, who are not known as authors: the first was a native of Bazats, the other two were Portuguese. All these professors except P. Buchanan and Fabricius had taught in the College of Guienne. To this catalogue Dempster has added other two Scottish names, those of John Rutherford and William Ramsay. Govea died in the year 1548; and after Buchanan and his associates were deprived of his protection, the Portuguese began to persecute them with unrelenting bigotry. Three of their number were thrown into the dungeons of the inquisition, and after having been subjected to a tedious imprisonment, were at length arraigned at this direful tribunal. According to the usual practice, they were not confronted with their accusers, of whose very names they were ignorant. As they could not be convicted of any crime, they were overwhelmed with reproaches, and again committed to custody.

Buchanan had attracted an unusual degree of indignation. He was accused of having written an impious poem against the Franciscans, yet with the nature of that poem the inquisitors were totally unacquainted. He was also charged with the heinous crime of eating flesh in Lent, and yet with respect to that very article, not a single individual in Portugal deemed it necessary to practise abstinence. Some of his strictures relative to monks were registered against him, but they were such as monks only could regard as criminal. He was moreover accused of having alleged, in a conversation with some young Portuguese, that with respect to the eucharist, St Augustin appeared to him to be strongly inclined towards the opinion condemned by the church of Rome. Two witnesses, whom he afterwards discovered to be Ferrerius and Talpin, made a formal deposition of their having been assured by several respectable informants that Buchanan was disaffected to the Romish faith. After the inquisitors had harassed him for the space of nearly two years and a half, they confined him to a monastery, for the purpose of receiving edifying lessons from the monks; whom, with due discrimination, he represents as men by no means destitute of humanity, but totally unacquainted with religion. In their custody he continued several months; and it was about this period that he began his version of the Psalms, afterwards brought to so happy a conclusion. That this translation was a penance imposed upon him by his illiterate guardians, is only to be considered as an idle tale: it is much more probable that a large proportion of the good monks were incapable of reading the Psalms in their native language. When he was at length restored to liberty, he solicited the king's permission to return to France: he was however requested to protract his residence in Portugal, and was presented with a small sum of

Buchanan. money till he should be promoted to some station worthy of his talents; but his ambition of Portuguese preferment was not perhaps very violent, for he still remembered with regret the learned and interesting society of Paris. In a beautiful poem, entitled *Desiderium Lutetice*, and apparently composed before his retreat from Portugal, he pathetically bewails his absence from that metropolis, which he represents under the allegory of a pastoral mistress. Having embarked in a Candian vessel, which he found in the port of Lisbon, he was safely conveyed to England. Here however he did not long remain, though he might have procured some creditable situation, which he himself has not particularized. He returned to France about the beginning of the year 1553. Soon after his arrival in Paris, he was appointed a regent in the College of Boncourt; and in the year 1555 he was called from that charge by the celebrated Comte de Brissac, who engaged him as the domestic tutor of his son Timoleon de Cossé.

During the five years of his connexion with this illustrious family, he alternately resided in Italy and France. In the mean time several of his poetical works were published at Paris. In 1556 appeared the earliest specimen of his poetical paraphrase of the Psalms; and his version of the *Alcestis* of Euripides was printed in the course of the subsequent year. This tragedy he dedicated to Margaret, the daughter of Francis the First, a munificent princess, whose favour he seems to have enjoyed. His engagement with the family of Brissac terminated in the year 1560, when the civil war had already commenced. It was perhaps the alarming aspect of affairs in France that induced Buchanan to hasten his return to his own country. The precise period of his return has not been ascertained; but it is certain that he was at the Scottish court in January 1562, and that in the month of April he was officiating as classical tutor to the queen, who was then in the twentieth year of her age. Every afternoon she read with Buchanan a portion of Livy. This author is not commonly recommended to very young scholars; and indeed the study of the Latin language is known to have occupied a considerable share of her previous attention.

The era at which Buchanan finally returned to his native country was highly important. After a violent struggle against the ancient superstition, the principles of the reformed faith received the sanction of parliament in the year 1560. For the doctrines of the reformation he had long cherished a secret affection; and he now professed himself a member of the protestant church of Scotland. The earl of Murray, as commendator of the priory of St Andrews, possessed the right of nominating the principal of St Leonard's College; and a vacancy occurring in the year 1566, he conferred the office upon Buchanan. The tenure of his appointment seems to have imposed upon him the task of reading occasional lectures on divinity.

On his return to Scotland, he determined to publish, in a correct manner, the poetical works which he had composed at many different periods of his variegated life. Of his admirable version of the Psalms, the date of the first complete edition is uncertain, for it has been omitted in the book itself; but a second edition appeared in the year 1566. When he consigned his Psalms to the printer, he was probably engaged in superintending the classical studies of Queen Mary; and to that accomplished and hopeful princess he gratefully inscribed a work destined for immortality. His dedication has received, and indeed is entitled to the highest commendation for its terseness, compression, and delicacy. Buchanan had recommended himself to the queen by other poetical tributes: one of his most beautiful productions is the Epithalamium which he composed on her first nuptials; and several of his miscellaneous poems relate to the same princess. Nor was

she insensible of his powerful claims upon the protection of his country. In the year 1564 she had rewarded his literary merit by conferring upon him the temporalities of Crossragwell Abbey, which amounted in annual valuation to the sum of L.500 in Scottish currency. The abbacy had become vacant by the death of Quintin Kennedy. But while he thus enjoyed the favour of the queen, he did not neglect his powerful friend the earl of Murray. To that nobleman he inscribed his *Franciscanus* during the same year. The date of the earliest edition is uncertain; but the dedication was written at St Andrews on the 5th of June 1564, when he was perhaps residing in the earl's house. He at the same time prepared for the press his miscellany entitled *Fratres Fraterrimi*, a collection of satires, almost exclusively directed against the impurities of the popish church. The absurdity of its doctrines, and the immoral lives of its priests, afforded him an ample field for the exercise of his formidable talents; and he has alternately employed the weapons of sarcastic irony and vehement indignation. His admirable wit and address must have contributed to promote the cause which Luther had so ardently espoused; and Buchanan ought also to be classed with the most illustrious of the reformers. In the year 1567 he published another collection, consisting of *Elegiæ*, *Silvæ*, *Hendecasyllabi*. To this miscellany was prefixed an epistle to his friend Peter Daniel, a learned man, who is still remembered for his edition of Virgil, with the commentary of Servius. His *Miscellanea* were not printed till after the death of the author. Of his short and miscellaneous pieces the subjects are sometimes indeed of a trivial nature; but even those lighter efforts serve to evince the wonderful versatility of his mind. His epigrams, which consist of three books, are not the least remarkable of his compositions; the terseness of the diction, the ingenuity and pungency of the thoughts, have deservedly placed them in a very high class.

Of the general assembly convened at Edinburgh on the 25th of December 1563, Buchanan had sat as a member, and had been appointed one of the commissioners for revising the Book of Discipline. He sat in the June assemblies of 1564 and the three following years, and likewise in that of December 1567. He was a member of various committees, and evidently had no small influence in the affairs of the church. Of the assembly which met at Edinburgh on the 25th of June 1567, he had the honour of being chosen moderator.

The nation was now in a state of anarchy, and the change of affairs drew Buchanan into the vortex of politics. The recent conduct of Queen Mary, whom he once regarded in so favourable a light, had offered such flagrant insults to virtue and decorum, that his attachment was at length converted into the strongest antipathy. The simple and uncontroverted history of her proceedings, from the period of her pretended reconciliation with Darnley to that of her marriage with Bothwell, exhibits such strong moral evidence of her criminality as it seems impossible for an unprejudiced mind to resist. "There are indeed," as Mr Hume has remarked, "three events in our history, which may be regarded as touchstones of party-men. An English Whig, who asserts the reality of the popish plot, an Irish Catholic, who denies the massacre of 1641, and a Scotch Jacobite, who maintains the innocence of Queen Mary, must be considered as men beyond the reach of argument or reason, and must be left to their prejudices." Buchanan accompanied the regent Murray when he visited England for the purpose of appearing before Elizabeth's commissioners. On the 4th of October 1568, the conference was opened at York; but in the course of the ensuing month it was transferred to Westminster. This singular transaction was managed with

Buchanan, great address on both sides: nor was Buchanan the least powerful of Murray's coadjutors; he composed in Latin a detection of Queen Mary's actions, which was produced to the commissioners at Westminster, and was afterwards circulated with great industry by the English court. His engaging in a task of this kind, as well as his mode of executing it, has frequently been urged as a proof of his moral depravity; and, to augment his delinquency, the benefits conferred upon him by the unfortunate queen have been multiplied with considerable ingenuity. It is certain that she granted him the temporalities of Crossragwell Abbey; and beyond this single point the evidence cannot be extended. Nor was this reward bestowed upon a man who had performed no correspondent services. He had officiated as her classical tutor, and had composed various poems for the entertainment of the Scottish court; but the dedication of his Psalms might almost be considered as equivalent to any reward which she conferred. If Buchanan celebrated her in his poetical capacity, and before she ceased to be an object of praise, it certainly was not incumbent upon him to approve the atrocious actions which she afterwards performed. The duty which he owed to his country was a prior consideration, and with that duty his further adherence to the infatuated princess was utterly incompatible.

The earl of Murray and his associates returned to Scotland in the beginning of the ensuing year. Buchanan's Detection, which was not published till 1571, seems to have been entrusted to Dr Wilson, who is supposed by Mr Laing to have added the "Actio contra Mariam Scotorum Reginam," and the Latin translation of Mary's first three letters to the earl of Bothwell. The good regent did not long survive those transactions: on the 23d of January 1570 he was shot in the street of Linlithgow by Hamilton of Bothwellhaugh, whom his clemency had formerly rescued from an ignominious death. The assassin had been confirmed in his enterprise by the approbation of his powerful kinsmen. The indignation of Buchanan was naturally roused against the house of Hamilton; and he had sufficient cause to suspect that their dangerous schemes were not yet completed. Under such impressions as these, he composed "Ane Admonitioun direct to the trew Lordis, Mantenaris of the Kingis Graces Authoritie;" in which he earnestly adjured them to protect the young king, and the children of the late regent, from the perils which seemed to await them. It was apparently in the course of the same year, 1570, that he wrote another Scottish tract, entitled *Chamæleon*. In this satirical production he very successfully exposes the wavering politics of the famous secretary Maitland. Soon after the assassination of his illustrious friend, Buchanan was removed to a situation of no small importance; he was appointed one of the preceptors of the young king. For this preferment he appears to have been indebted to the privy council, and others of the nobility and gentry, who assembled in consequence of that disastrous event, for the purpose of providing for the public security.

During his infancy, the prince had been committed to the charge of the earl of Mar, a nobleman of the most unblemished integrity. In 1570, when Buchanan entered upon his office, James was only four years of age. The chief superintendence of his education was left to the earl's brother, Alexander Erskine. The preceptors associated with Buchanan, were Peter Young, and the two abbots of Cambuskenneth and Dryburgh, both related to the noble family of Mar. Young, who was respectable for his capacity and learning, was of a disposition naturally mild; and his attention to his future interest rendered him cautious of offending a pupil who was soon to be the dispenser of public favours. But the lofty and independent

spirit of Buchanan was not to be controlled by the mere suggestions of cold caution: the honourable task which the voice of his country had assigned to his old age, he discharged with simple integrity, and, so far as he himself was concerned, he was little solicitous what impression the strictness of his discipline might leave on the mind of his royal pupil. James, who was of a timid nature, long remembered the commanding aspect which his illustrious preceptor had assumed. He was accustomed to say of some individual high in office, "that he ever trembled at his approach, it minded him so of his pedagogue." The young monarch's proficiency in letters was such as reflected no discredit on his early instructors. Buchanan made him a scholar, and nature had destined him for a pedant.

Nor was this the only preferment which he now obtained. His first civil appointment, which he seems to have retained but a short time, was that of director of the chancery. The keeper of the privy seal, John, afterwards Lord Maitland of Thirlstane, having been deprived of his office on account of his adherence to the queen, it was conferred upon Buchanan in the year 1570. The earl of Lennox was at that time regent. His situation as lord privy seal was undoubtedly honourable, and probably lucrative. It entitled him to a seat in parliament. This office he retained for several years; for under the date of November 1579, he is enumerated among the ordinary officers of state entitled to a seat in the council. His talents and his station evidently gave him no small share of influence, and he was associated in various commissions of importance.

Notwithstanding the precarious state of his health, and the number of his avocations, he found leisure to compose a most profound and masterly compendium of political philosophy. It is entitled *De Jure Regni apud Scotos*, and was first printed at Edinburgh in the year 1579. Although it professedly relates to the rights of the crown of Scotland, it comprehends a subtle and eloquent delineation of the general principles of government. The work is exhibited in the form of a dialogue between the author and Thomas the son of Sir Richard Maitland. Buchanan's dialogue excited a degree of attention which will not appear surprising, when we consider the high reputation of the author, and the boldness of the precepts which he inculcates. In the course of a few years, his tenets were formally attacked by his learned countrymen Blackwood, Winzet, and Barclay, all of whom were zealous Catholics. Some of Barclay's arguments were long afterwards refuted by Locke. Buchanan was also attacked, though in an indirect manner, by Sir Thomas Craig, and by Sir John Wemyss. Craig was a lawyer of much learning and ability, and his treatise on the feudal law still continues to be held in great estimation. Sir George Mackenzie, the servile tool of a most profligate court, undertook to defend against Buchanan the same maxims of polity; and it must be acknowledged that "the right divine of kings to govern wrong," was a very suitable doctrine for the ministers of Charles and James. In the course of the seventeenth century, his leading principles were also opposed by Sir Lewis Stewart, a lawyer, and by Sir James Turner, a soldier. The former wrote in Latin, the latter in English, but neither of their productions has been printed; and the republic of letters has sustained no detriment by their long suppression. He was incidentally assailed by many foreign authors, who seem in general to have been bewildered by the current doctrine of the divine and indefeasible right of kings, and the passive obedience of subjects. This was indeed the doctrine of Catholics and Protestants, of civilians and divines. Grotius, though born under a free republic, and certainly a man of a great and liberal mind, did not entirely escape the contamination of

Buchanan. those slavish maxims which were so prevalent during the age in which he lived: the right of resisting any superior power which happens to be established, he has discussed in a manner that could hardly offend the completest despot in Europe. There is perhaps too much justice in the remark of Rousseau, that it is his most common method of reasoning, to establish the right by the fact. It is one general fault of those writers, to found their theories on passages of scripture which are not didactic or exegetical, but merely historical. This obsolete perversion they seem to have derived from the authority of those early theologians who are commonly styled the fathers of the church; and who, if not always very safe guides in morality and in biblical criticism, are certainly exceptionable guides in political science. The degrading doctrine of passive obedience was inculcated by Salmasius, Bochart, Usher, and indeed by several very able men who approached much nearer to our own times: it was even inculcated by the famous Dr Berkeley, in some metaphysical discourses preached before the university of Dublin in the year 1712. It is however a doctrine which no Briton, capable of reflection, and possessed of ordinary sincerity, will now hesitate a single moment in rejecting with the utmost indignation.

But the full measure of Buchanan's ignominy has not yet been related. In the year 1584 the parliament condemned his dialogue and history as unfit to remain for records of truth to posterity; and, under a penalty of two hundred pounds, commanded every person who possessed copies to surrender them within forty days, in order that they might be purged of "the offensive and extraordinary matters" which they contained. In 1664, the privy council of Scotland issued a proclamation, prohibiting all subjects, of whatever degree, quality, or rank, from transcribing or circulating any copies of a manuscript translation of the dialogue. And in 1683, the loyal and orthodox university of Oxford doomed to the flames the political works of Buchanan, Milton, Languet, and other heretics. This university, says Cunningham, debauched the minds of the youth with its slavish doctrines, and pronounced a severe judgment against Buchanan for vindicating the rights of the kingdom. The Scottish legislature, the English university, and the popish tribunal of the inquisition, seem to have viewed this unfortunate speculator with equal abhorrence. And what are the terrible doctrines that once excited so violent an alarm? Buchanan maintains that all power is derived from the people; that it is more safe to entrust our liberties to the definite protection of the laws, than to the precarious discretion of the king; that the king is bound by those conditions under which the supreme power was originally committed to his hands; that it is lawful to resist, and even to punish tyrants. When he speaks of the people as opposed to the king, he evidently includes every individual of the nation except one. And is a race of intelligent beings to be assimilated to a tract of land, or a litter of pigs; to be considered, absolutely and unconditionally, as the lawful patrimony of a family which either merit, accident, or crime, may originally have elevated to the summit of power? In this country and this age it certainly is not necessary to remark, that man can neither inherit nor possess a right of property in his fellow-creatures. What is termed loyalty, may, according to the circumstances of the case, be either a virtue or a vice. Loyalty to Antoninus and loyalty to Nero must assuredly have flowed from different sources. If the Roman people had endeavoured to compass the death of Nero, would this have been foul and unnatural rebellion? The doctrine of punishing tyrants in their persons, either by a private arm, or by the public forms of law, is indeed of a delicate and dangerous nature; and it

may be considered as amply sufficient, to ascertain the previous right of forcible resistance. It will always be extremely difficult, if not impossible, to find a competent tribunal and impartial judges. But if mankind are at length roused to the redress of enormous wrongs, the prince who has either committed or sanctioned an habitual violation of the best rights of the people, will seldom fail to meet with an adequate reward; and in spite of all the slavish theories of his priests and lawyers, mankind will not long be reasoned out of the strongest feelings of their nature. Divine right and passive obedience were never more strenuously inculcated, than in the reign of Charles the First.

In the seventy-fourth year of his age, Buchanan composed a brief sketch of his own life. The last production which he lived to complete was his history of Scotland, *Rerum Scotticarum Historia*. In the year 1582, it issued from the press of Alexander Arbuthnot, printer to the king. It bears the royal privilege, and is dedicated to the young monarch. Between the original formation of his plan, and the publication of the history itself, nearly twenty years must have elapsed; but it is to be supposed that he long revolved the subject in his mind, and had proceeded to amass the greater part of his materials, before he applied himself to its composition; and during that interval, his attention had been distracted by various pursuits, political as well as literary.

Buchanan has divided his history into twenty books. The first three ought rather to have been exhibited in the form of an introductory dissertation, for the historical narrative properly commences with the fourth book. His preliminary enquiries are directed to the geographical situation, the nature of the soil and climate, the ancient names and manners, and the primitive inhabitants, of the British islands. The third book consists of a series of quotations from the Greek and Latin authors. The whole of this introductory part displays his usual erudition and sagacity; and, in the opinion of Archbishop Usher, no writer had investigated the antiquities of his country with superior diligence. In these disquisitions he evinces his knowledge of the Celtic as well as of the classical languages. In the earlier part of his narrative, he has reposed too much confidence on his predecessor Boyce. He appeals to several other Scottish historians; and he unquestionably had access to historical documents which are no longer extant. He has occasionally availed himself of the collateral aid of the English and French writers. Of the earlier reigns his sketch is brief and rapid; nor has he attempted to establish any chronological notation till he descends to the beginning of the fifth century. It must indeed be acknowledged that he has repeated the fabulous line of our ancient kings; but that continued till a much later period to be regarded as an article of national faith. Like most of the classical historians, he is too remiss in marking the chronology of the different facts which he relates. From the reign of the great King Robert, his narrative becomes much more copious and interesting; but the history of his own times, which were pregnant with remarkable events, occupies far the largest proportion of his twenty books. In some of the transactions which he records, his own affections and passions were deeply concerned, and might not unreasonably be expected to impart some tincture to his style. His indignation against the ill-fated queen he shared with a very large proportion of his fellow-subjects; and many of her actions were such as could not fail of exciting the antipathy of every well-regulated mind. The composition of his history betrays no symptoms of the author's old age and infirmities; his style is not merely distinguished by its correctness and elegance, it breathes all the fervent anima-

tion of youthful genius. The noble ideas which so frequently rise in his mind, he always expresses in language of correspondent dignity. His narrative is extremely perspicuous, variegated, and interesting; it is seldom deficient, and never redundant. His moral and political reflections are profound and masterly. He is ready upon all occasions to vindicate the unalienable rights of mankind; and he uniformly delivers his sentiments with a noble freedom and energy. It is with the utmost propriety that the learned Conring has commended him as a man of exquisite judgment. Thuanus remarks that although much of his time had been spent in scholastic occupations, yet his history might be supposed the production of a man whose whole life had been exercised in the political transactions of the state; the felicity of his genius, and the greatness of his mind, having enabled him so completely to remove every impediment incident to an obscure and humble lot. And, in the opinion of Bishop Burnet, "his stile is so natural and nervous, and his reflections on things are so solid, that he is justly reckoned the greatest and best of our modern authors."

The publication of this great work he did not long survive. His usual vein of pleasantry did not entirely desert him on his death-bed. When visited by John Davidson, a distinguished clergyman, he devoutly expressed his reliance on the atoning blood of Christ; but he could not refrain from introducing some factitious reflections on the absurdities of the mass. He expired soon after five o'clock in the morning of Friday the 28th of September 1582, at the age of seventy-six years and nearly eight months. His remains were interred in the cemetery of the Greyfriars: Calderwood informs us that the funeral took place on Saturday, and was attended by "a great company of the faithful."

Buchanan had experienced many of the vicissitudes of human life, and had been tried by prosperity as well as adversity. His moral and intellectual character procured him the same high respect from the most enlightened of his contemporaries. His stern integrity, his love of his country and of mankind, cannot fail of endearing his memory to those who possess congenial qualities; and such errors as he actually committed, will not perhaps be deemed unpardonable by those who recollect the condition of humanity. He was subject to the nice and irritable feelings which frequently attend exalted genius, enthusiastic in his attachment, and violent in his resentment, equally sincere in his love and in his hatred. His friends, among whom he numbered some of the most distinguished characters of the age, regarded him with a warmth of affection which intellectual eminence cannot alone secure. His conversation was alternately facetious and instructive: his wit and humour are still proverbial among his countrymen. Such of his contemporaries as could best judge of his conduct and character, evidently regarded him as a man of sincere piety.

Nor was the genius of Buchanan less variegated than his life. In his numerous writings he discovers a vigorous and mature combination of talents, which have seldom been found united in equal perfection. To an imagination excursive and brilliant, he unites an undeviating rectitude of judgment. His learning was at once elegant, various, and profound: Turnebus, who was associated with him in the same college, and whose opinion is entitled to the greatest deference, has characterized him as a man of consummate erudition. Most of the ancient writers had limited their aspiring hopes to one department of literature; and even to excel in one, demands the happy perseverance of cultivated genius. Plato despaired of securing a reputation by his poetry; the poetical attempts of Cicero, though less contemptible perhaps than

they are commonly represented, would not have been sufficient to transmit an illustrious name to future ages. Buchanan has not only attained to excellence in each species of composition, but in each species has displayed a variety of excellence: in philosophical dialogue and historical narrative, in lyric and didactic poetry, in elegy, epigram, and satire, he has scarcely been surpassed either in ancient or modern times. A few Roman poets of the purest age have excelled him in their several provinces; but none of them has evinced the same capability of universal attainment. Horace and Livy wrote in the language which they had learned from their mothers; but its acquisition was to Buchanan the result of much youthful labour. Yet he writes with the purity, the elegance, and freedom of an ancient Roman. Unfettered by the classical restraints which shrivel the powers of an ordinary mind, he expatiates with all the characteristic energy of strong and original sentiment; he produces new combinations of fancy, and invests them with language equally polished and appropriate. His diction uniformly displays a happy vein of elegant and masculine simplicity, and is distinguished by that propriety and perspicuity which can only be attained by a man perfectly master of his own ideas, and of the language in which he writes. The variety of his poetical measures is immense, and to each species he imparts its peculiar grace and harmony. The style of his prose exhibits correspondent beauties, nor is it chequered by phraseology unsuitable in that mode of composition. His diction, whether in prose or verse, is not a tissue of centos; he imitates the ancients as the ancients imitated each other. No Latin poet of modern times has united the same originality and elegance; no historian has so completely imbibed the spirit of antiquity, without being betrayed into servile and pedantic imitation. But his works may legitimately claim a higher order of merit; they have added no inconsiderable influx to the general stream of human knowledge. The wit, the pungency, the vehemence, of his ecclesiastical satires, must have tended to foment the genial flame of reformation; and his political speculations are evidently those of a man who had nobly soared beyond the narrow limits of his age.

Of the works of Buchanan there are two collective editions, the earlier of which was published by Ruddiman. Edinb. 1715, 2 tom. fol. The editor's masterly acquaintance with philology, and with the history of his native country, had eminently qualified him for such an undertaking. The accuracy of the text, and the utility of his illustrations, are equally conspicuous. He has prefixed a copious and satisfactory preface, and, among other appendages, has added a curious and critical dissertation *De Metris Buchananæis*. His annotations on Buchanan's history are particularly elaborate and valuable; but it is to be lamented that his narrow politics should so frequently have diverted him from the more useful tracts of enquiry. Where political prejudices intervene, he is too eager to contradict his author; and he often attempts, by very slender and incompetent proofs, to extenuate the authenticity of his narrative. In illustrating the moral and literary character of Buchanan, he spent many years of his life. With great zeal and success, he afterwards vindicated his paraphrase of the Psalms against the objections of Benson; but his political prejudices seem to have increased with the number of his years. His controversies with Love and Man were conducted with sufficient pertinacity; though it must be acknowledged that the advantage of learning, and even of candour, generally inclines to Ruddiman's side. Another edition of Buchanan's works was published by Burman, a most indefatigable and useful labourer in the department of philology, and a man of

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much more taste and talent than some of our readers may perhaps be inclined to suppose. Lugd. Bat. 1725, 2 tom. 4to. He has reprinted his predecessor's notes, dissertation, and other appendages, and has himself interspersed some critical annotations.¹ (x.)

BUCHEN, a city in the bailiwick of Bischofsheim, in the duchy of Baden. It stands on the river Morn, and contains 2340 inhabitants, carrying on various trades, among whom are many families of Jews.

BUCK, a circle in the Prussian government of Posen, formerly part of Poland. It extends over 371 square miles, or 237,440 acres, and contains six small cities and 117 villages, with 30,170 inhabitants. It is a woody, and in great part a sandy district. The chief place, of the same name, contains 222 houses and 1425 inhabitants.

BUCKDEN, a town of the hundred of Toesland, in the county of Huntingdon, sixty-one miles from London, on the great road to York. At this place there is a fine palace, the country residence of the Bishop of Lincoln. The inhabitants amounted in 1801 to 869, in 1811 to 914, and in 1821 to 973.

BUCKEBURG, a city, the capital of the dominions of the prince of Schauenburg-Lippe. It stands on the side of a hill, at the foot of which runs the river Aa, about seven miles from Minden. It has nothing remarkable except the castle of the prince, with a park around it, and the usual appendages of miniature royalty. The city is finely situated, and contains 2120 inhabitants, who chiefly depend on the court. Long. 8. 57. 21. E. Lat. 52. 15. 47. N.

BUCKENHAM, New, a market-town of the hundred of Shropham, in the county of Norfolk, ninety-five miles from London. The market is held on a Saturday. The inhabitants amounted in 1801 to 664, in 1811 to 691, and in 1821 to 720. Old Buckenham, one mile and a half distant from the above, though not a market-town, is the most populous of the two places, the inhabitants amounting in 1801 to 845, in 1811 to 937, and in 1821 to 1134.

BUCKINGHAM, the chief town of the county of that name, fifty-seven miles from London, on the river Ouse, over which there are three stone bridges. The streets are crooked and narrow, and the houses not remarkable for beauty. The assizes are held here alternately with Aylesbury, and also the quarter sessions. There is a good market on Saturday. The inhabitants amounted in 1801 to 2605, in 1811 to 3001, and in 1821 to 3465.

BUCKINGHAM, *Georgie Villiers, Duke of*. See VILLIERS.

BUCKINGHAM, *John Sheffield, Duke of*. See SHEFFIELD.

BUCKLER, a piece of defensive armour used by the ancients. It was worn on the left arm, and composed of wickers woven together, or wood of the lightest sort, covered with hides, and fortified with plates of brass or other metal. The figure was sometimes round, sometimes oval, and sometimes almost square. Many of these bucklers were curiously adorned with figures of birds and beasts, as eagles and lions, and of the gods, the celestial bodies, and all the works of nature; a custom which was derived from the heroic times, and from them communicated to the Grecians, Romans, and Barbarians. The *scutum*, or Roman buckler, was composed of wood, the parts being joined together with little plates of iron, and the whole covered with a bull's hide. In the middle was an iron boss or *umbo* jutting out, to glance off stones and darts, and sometimes to press violently upon the enemy, and drive all before them. The *scuta* are to be distinguished from the *clypei*, which were less in size, and quite circular. This species of shield belonged properly to other na-

tions, though for some little time it was used by the Romans. The *scuta* themselves were of two kinds, the *ovata* and the *imbricata*; the former being a plain oval figure; the latter oblong, and bending inward like half a cylinder. Polybius makes the *scuta* four feet long, while Plutarch calls them *ποδύγεις*, reaching down to the feet; and it is very probable that they covered almost the whole body, since in Livy we meet with soldiers, who stood on the guard, sometimes sleeping with their head on their shield, having fixed the other part of it in the earth.

Votive BUCKLERS, those consecrated to the gods, and hung up in their temples, either in commemoration of some hero, or as a thanksgiving for a victory obtained over an enemy, whose bucklers, taken in war, were offered as trophies.

BUCKRAM, in commerce, a sort of coarse linen cloth stiffened with glue, and used in the making of garments, to keep them in the form intended.

BUCKS, or BUCKINGHAMSHIRE, an interior county of England. It is bounded on the north-west and north by Northamptonshire, on the west by Oxfordshire, on the south by Berkshire, and on the east by Bedfordshire and Hertfordshire, and in part by Middlesex, the southernmost part of the county, which ends in a point, approaching to within twelve or fourteen miles of London. It is in the form of a crescent, but, owing to indentations, very irregular in its breadth, being in the widest part only twenty-two miles. In length it is about fifty miles, and in extent about seven hundred and thirty square miles, or four hundred and seventy thousand statute acres, including roads, rivers, and the sites of towns.

The southern part of the county is beautifully diversified with hill and dale, is well wooded, has abundant and transparent streams, and is in a state of cultivation which exactly corresponds with the features of the district. The centre of the county is less picturesque, though some of the spurs of the hills which protrude into the vale of Aylesbury have a striking effect. The northern part is less beautiful, though the soil is commonly fertile. The principal rivers which convey to the sea the waters of this county are the Thames and the Ouse. The former rises in the vale of Aylesbury, enters Oxfordshire at Thame, and after various sinuosities again approaches Buckinghamshire at Henley, and becomes the boundary between it and Berkshire, till it receives the waters of the Coln, and passes by London to the sea. The Ouse, which drains the northern part of the county, comes out of Northamptonshire, receives the water of the Lysell at Newport-Pagnell, runs through Bedfordshire before it becomes navigable, and finally enters the sea at Lynn. The grand junction canal, which brings the coal districts into connection with the metropolis, passes through the northern and middle parts of the county, and, by means of subsidiary cuts, to Buckingham, Aylesbury, and Wendover, and extends the dispersion of cheap fuel over a wide district, which formerly suffered severely from the scarcity and dearth of that necessary of life.

A part of that range of hills consisting of chalk and flints, which begins in Norfolk, and extends to Dorsetshire, is here denominated the Chilterns. The soil in general is poor, and the climate bleak; but by assiduous cultivation, it produces moderate crops of barley, and some wheat, and feeds both sheep and horned cattle. The vale of Aylesbury, by which it is bounded to the south, is a district rich in the productions of the dairy; in wheat, beans, and especially in grazing pasture, it is also highly fertile. There is a part of the county adjoining to Bedfordshire,

¹ See the second edition of Dr Irving's *Memoirs of the Life and Writings of George Buchanan*. Edinb. 1817, 8vo.

near Leighton-Buzzard, consisting of barren heaths; but, with this exception, the whole may be considered as highly fertile and well cultivated. According to the returns of rental under the property-tax, the average rent of land in Buckinghamshire by the acre, when compared with that of all England, was as 713 to 595; and was exceeded by no county except Leicester, Somerset, Warwick, and Hertford. The largest landed proprietors are the Grenville and Cavendish families, Mr Drake, Sir John Dashwood King, Lord Carrington, Mr Dupré, and some others.

The manufactures of Buckinghamshire are by no means considerable in number or extent. A few years ago the females were generally occupied in making pillow lace, both from thread and silk; but the progressive improvements in machinery have enabled the people of Nottingham and other parts of the kingdom to offer a substitute in machine lace so much cheaper, and equally beautiful, that the trade has been diminished to a very insignificant demand. There are several extensive establishments for making writing paper, on the transparent streams near Wycombe. At Amersham there are manufactories both of cotton and silk, which of late years have been extended. The chief trade of the county is that which arises from the internal navigation, by which heavy commodities, such as coals, iron, timber, and limestone, are supplied to the inhabitants.

The civil division of the county is into the eight hundreds of Buckinghamshire, Burnham, Cottlesloe, Desborough, Ashenden, Aylesbury, Newport, and Stoke. It contains nine towns, a hundred and eighty-one parishes, and twenty-six hamlets. The bishop of Lincoln is the superior ecclesiastic, and administers his jurisdiction by the archdeacon of Bucks; but four of the parishes within the county are peculiars of the archbishopric of Canterbury, and four others are in the diocese of London and archdeaconry of St Albans. The county forms a part of the Norfolk judicatory circuit, and the assizes are held alternately at Buckingham and at Aylesbury; the quarter sessions always at the latter town.

The following titles are derived from this county, viz. Duke of Buckingham, Earl of Buckinghamshire, and Marquis of Aylesbury. Three members are returned to the House of Commons by the county.

The population of Buckinghamshire, and the inhabited houses, at the four decennial enumerations, have been as follows:

Years.	Males.	Females.	Total.	Houses.
1801.....	52,094.....	55,350.....	107,444.....	20,443
1811.....	56,208.....	61,442.....	117,650.....	20,986
1821.....	64,867.....	69,201.....	134,068.....	24,876
1831.....	71,734.....	74,795.....	146,529	

The families, according to the census of 1821, who were chiefly engaged in agriculture, were 16,640; those employed in trade, manufactures, or handicraft, were 8318; and those not comprised in either of the preceding classes were 3909.

The most attractive object in this county of a public nature is the college at Eton. This establishment, founded in 1440 by the unfortunate King Henry VI., is distinguished by the beauty of the valley in which it stands, the flourishing state of its endowments, and the number of eminent men who have there received the first rudiments of knowledge. The chapel is a fine specimen of the architecture of the age in which it was erected. The number of pupils has generally amounted to between three and four hundred, with the exception of the king's scholars, mostly the sons of families of the first rank.

Although some of the most magnificent seats of noblemen and gentlemen have been suffered to go to decay, such as Bulstrode, formerly belonging to the Dukes of

Portland, and now to the Duke of Somerset; and Eyethorpe, the property of the Earl of Chesterfield; yet many remain to adorn the county of Bucks. The most eminent is that of Stowe, belonging to the Duke of Buckingham, celebrated for its grounds, its collection of pictures and statues; to which may be added, Cliefden on the Thames, belonging to the Countess of Orkney; Dropmore, to Lord Grenville; Wooton, to the Marquis of Chandos; Stoke Park, to J. Penn, Esq.; Hampden, to the Earl of Buckinghamshire; Hedsor, to Lord Boston; Wilton Park, to J. Dupré, Esq.; Latemers, to Lord George Cavendish; Hartwell, the residence of the late King of France, to Dr Lee; Shardelos, to Mr Drake; Taploe House, to Marquis Thomond; Wycombe Abbey, to Lord Carrington; Wycombe Park, to Sir John Dashwood; Chequers, to J. Russell, Esq.; and Kimble Magna, to Sir Scroope Barnard.

This county has been the birth-place or the residence of several distinguished individuals. Brown, usually called Capability Brown, celebrated for his taste and skill in ornamental gardening, was born and first employed at Stowe; Bishop Atterbury was born at Milton Keynes; Sir Kenelm Digby, "the prodigy of learning, credulity, valour, and romance," was born at Gaythurst, near Newport-Pagnell; Hampden the patriot, Waller the poet, and Ingoldsbys and Desborough the parliamentary generals, were all related to each other, and natives of Bucks. It was the residence of Milton during two periods of his life; and the house near Chalfont, St Giles, which he inhabited, is still to be seen. Edmund Burke, Cowper the poet, and Herschel the acute and indefatigable astronomer, were inhabitants of Bucks. The observatory of the latter, and his powerful telescopes, still remain at Slough, and are usefully employed by his talented son.

The name of this county has been traced by some to the Saxon word *Buc*, which signifies a buck; but with more probability by others to the word *Bûch*, which signified the beech, a tree which was the most abundant, especially on the Chilterns. Before the invasion of the Romans it was included in the division of the *Catiuchlani*, and after their conquest in their third province of *Flavia Caesariensis*. During the Heptarchy it was a part of the kingdom of Mercia, having had eighteen successive kings.

The chief towns, with their population in 1821, were the following:

Aylesbury.....	4400	Marlow.....	3863
Buckingham.....	3465	Newport-Pagnell.....	3103
Amersham.....	2612	Eton.....	2475
Olney.....	2333	Princes Risborough.....	1958
Great Missenden.....	1735	Beaconsfield.....	1736
Wendover.....	1607	Winslow.....	1222

BUCOLIC, in ancient poetry, a kind of poem relating to shepherds and country affairs, which, according to the generally received opinion, was of Sicilian origin. Bucolics, says Vossius, have some conformity with comedy. Like it, they are pictures and imitations of ordinary life; with this difference, however, that comedy represents the manners of the inhabitants of cities, and bucolics the occupations of people in the country. Sometimes, continues he, this last poem is in the form of a monologue, and sometimes in that of a dialogue. Sometimes there is action in it, sometimes only narration, and sometimes it is composed both of action and narration. The hexameter verse is the most proper for bucolics in the Greek and Latin tongues. Moschus, Bion, Theocritus, and Virgil, are the most renowned of the ancient bucolic poets.

BUCOVAR, a small circle in the Austrian kingdom of Hungary, surrounding the city of the same name, extending over two hundred and sixty-six square miles or 170,240 acres. The city stands at the junction of the

Buda
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Buddæus.

Buka with the Danube. It contains one Catholic and two Greek churches, with seven hundred houses, and 6300 inhabitants, chiefly employed in the cultivation of vines, the rearing of silk-worms, and the spinning of silk. Long. 18. 55. 20. E. Lat. 45. 21. 9. N.

BUDA, or OFEN, the capital of the Austrian kingdom of Hungary, jointly with the city of Pesth, with which it is in immediate communication by means of a bridge of boats leading to Margaret's Island. It is situated on the right bank of the Danube, is the residence of the palatines, and the seat of the boards of the several departments of government and of ecclesiastical affairs. The public buildings worthy of notice are the castle, in which the crown of Hungary is kept, the town-house, the orphan-house, and some of the churches. The inhabitants are about 28,500. They find employment in manufactures of leather, cutlery, silk, and woollen goods, and in the cultivation of the vineyards in the vicinity, which yield an excellent red wine. Long. 18. 55. 25. E. Lat. 47. 29. 44. N.

BUDÆUS, WILLIAM, descended of an ancient and illustrious family, was born at Paris in 1467. When young he was placed under masters; but barbarism prevailed so much in the schools of Paris, that Budæus took a dislike to them, and spent his whole time in idleness, till his parents sent him to the university of Orleans to study law. There he passed three years without adding to his knowledge; so that his parents having recalled him to Paris, found his ignorance no less than before, and his reluctance to study, and love to gaming and other useless pleasures, much greater. They talked no more to him of learning of any kind; and as he was heir of a large fortune, they left him to follow his own inclinations. He was passionately fond of hunting, and took great pleasure in horses, dogs, and hawks. But when the fire of youth began to cool, and his usual pleasures to pall upon his senses, he was seized with an irresistible passion for study; and having disposed of his hunting equipage, he abstracted himself from all business, in order to apply himself wholly to study; in which, without any assistance, he made a rapid progress, particularly in the Latin and Greek languages. The work which gained him greatest reputation was his treatise *De Asse*, the first edition of which was published at Paris in 1514, in folio. His erudition and high birth were not his only advantages; for he had an uncommon share of piety, modesty, gentleness, and good-breeding. The French king, Francis I. often sent for him, and, at his persuasion, and that of Du Bellay, founded the royal college of France, for teaching the languages and sciences. The king sent him to Rome in the character of ambassador to Leo X., and in 1522 made him master of requests. The same year he was chosen provost of the merchants. He died at Paris in 1540. His works, extending to four volumes in folio, were printed at Basel in 1557.

BUDDÆUS, JOHN FRANCIS, a celebrated Lutheran divine, and one of the most learned men Germany has produced, was born in 1667, at Anclam, a town of Pomerania, where his father was minister. He studied with great distinction at Greifswald and at Wittenberg; and having attained to eminence in languages, theology, and history, was appointed Greek and Latin professor at Colburg; afterwards professor of morality and politics in the university of Halle; and at length, in 1705, professor of divinity at Jena, where he died in 1729, after having acquired a very great reputation. His principal works are, 1. A large historical German Dictionary, Leipsic, 1709, folio; 2. *Historia Ecclesiastica Veteris Testamenti*, Halle, 1709, four vols. 4to; 3. *Elementa Philosophiæ Practicæ, instrumentalis et theoreticæ*, three vols. 8vo, which has passed through a great number of editions; 4. *Selecta Juris Naturæ et Gentium*, Halle, 1704, 8vo; 5. *Miscellanea*

Sacra, Jena, 1727, three vols. 4to; 6. *Isagoge Historico-Theologica ad Theologiam Universam, singulasque ejus partes*, two vols. 4to, a work much valued by the Lutherans; and, 7. A Treatise on Atheism and Superstition.

BUDDHA or BUDDHU, one of the two appearances of Vishnu, assumed for the purpose of deluding the enemies of the gods, and effecting their destruction by leading them to profess heretical opinions, and thus to reject the Hindu religion. In the Bhagawat, a work held in high esteem by the great majority of the Hindus, it is expressly declared, "that, at the commencement of the Kali Yuga, Vishnu became incarnate in Kikata, under the name of Buddha, the son of Jina, for the purpose of deluding the enemies of the gods;" that "the Undiscernible Being, having assumed a mortal form, preached heretical doctrines in the three cities founded by Maya, for the purpose of destroying, by deluding, the enemies of the gods, steadfast in the religion prescribed by the Vedas;" that praise is due to "the pure Buddha, the deluder of the Daityas and Danawas;" and that, "by his words, as Buddha, Vishnu deludes the heretics." The same legend is related in a more detailed manner in the Kashi Khand of the Skanda Purana, and also in the Ganesha Upa-Purana, in which the appearance of Buddha is described as a manifestation rather than an incarnation of Vishnu; and an account is given of the circumstances under which it is alleged to have been made. According to the Puranas, Divodasa, a king of the solar race, finding Kashi unoccupied, took possession of the place, and there established the religion of Vishnu on so firm a foundation, and rendered his people so virtuous and happy, that the gods having become alarmed lest they should lose their supremacy, which they maintained by the use of very different means, applied to Vishnu and Shiva to relieve them from their anxieties on this head. The two incarnations of the Supreme Being, however, declared at first that it would be unjust to deprive so virtuous a prince of his kingdom; but Divodasa, having obtained as a boon from Brahma that none of the deities should remain in his kingdom, or exercise any power over it, Shiva at length waxed wroth at being so long banished from his favourite residence, and consented to fulfil the malignant wishes of the deities. But how was this to be accomplished? As long as Divodasa and his subjects remained steadfast in their religion, they were secure from injury; it therefore became necessary to lead them into error as a pretext for destroying them; and with this view Devi, the twelve suns, and Ganesha, were employed, but without success. At last, when these minor tempters had failed, Vishnu appeared, as Buddha, and effected their apostasy.

From the tenor of this legend may be divined, *a priori*, the doctrines which it was necessary for Buddha to propagate, in order to induce Divodasa and his subjects to apostatize from the religion of the Vedas. These in fact were,—that no credit whatever is due to the Vedas or Shastras; that it is vain to worship the images of gods; that sacrifices are cruel and sinful; that there is no such thing as transmigration of souls; that at death the five elements in the body dissolve never to reunite; that pleasure is the grand object of life, and that all acts of abstinence, piety, and charity, are unprofitable; that the body is man's real god, and should alone be worshipped; that pleasant food, fine clothes, and handsome women, form the grand felicity of man; that this world is without beginning, and consequently owes its existence neither to creator nor cause; and that Brahma, Vishnu, Shiva, Budra, and all the other gods, are mere creatures of fancy and fear, and never had a being, except in the imaginations of their worshippers. In short, the ancient Brahminical Buddha, whether a manifestation of Vishnu according to

Buddha. the Shaivas, or an incarnation according to the Vaishnavas, was the propagator of a system of universal scepticism, embracing not only a disbelief of all religion, but also a disregard for all virtue, and indeed for every thing except mere sensual gratification. He was a false teacher and impostor, who came to deceive and to mislead, in order to destroy; not a kind and merciful being, adorned with the attributes of wisdom and benevolence, and worthy to receive all praise and worship, as some have erroneously supposed. Moreover, his appearance was for a temporary and local purpose, namely, to render Divodasa the voluntary cause of his own downfall, and thus to gratify the malice of the deities who had conceived an aversion to that virtuous potentate. But the sceptical doctrines which he disseminated in the course of his delusive manifestation became afterwards blended and internixed with a variety of others of a totally different description; so that, although Buddhism has ever continued more or less distinct from the faith of which originally it formed the negation, it is exceedingly difficult to trace its progress, and by no means easy to ascertain its precise character at any given period of time. The rejection of the Vedas, and of the religion founded upon them, seems, however, to be common to all forms of Buddhism; and although the Brahmins nevertheless recognise Buddha as an object of worship or reverence, it is only as a manifestation of Vishnu, one of the emanations of Brahm, or the Supreme Being, and not as a false teacher and an impostor, whose object was to deceive and delude, that he is acknowledged by the sacred caste of the Hindus. By not perceiving or not attending to this distinction, all the writers on the subject whose works we have consulted have entangled themselves in the mazes of inextricable perplexity and contradiction, and thickened the darkness which they laboured to dispel. M. Guigniaut, indeed, has attempted to cut the knot which he could not unloose. "Bouddha ne jouit d'aucun culte dans l'Inde," says he; "ses temples, ses idoles y sont renversés ou abandonnés; une ténébreuse horreur, une ignorance feinte ou réelle, une haine non moins violente qu'irréfléchie, regnent chez les Brahmanes, sur tout ce qui concerne sa doctrine." But in another part of his work (*Religions de l'Antiquité*, vol. i. p. 294), the same author admits that Buddha has not ceased to be revered by the Hindu nation; an admission wholly irreconcilable with the statement contained in the passage just quoted. This confusion of ideas, however, proceeds from incorrect notions as to the character of Buddha; for as long as he is considered merely as a manifestation of Vishnu, he is held to be an object of reverence, not as Buddha, but as the divinity who chose to appear in that form. The Hindus have never acknowledged him in any other character; and consequently all that has been written concerning him with reference to the religion of India, is wholly irrelevant, and foreign to the subject.

According to the fable, Buddha, when he had effected the apostacy of Divodasa, was prevailed upon by the Brahmins and holy men to terminate the propagation of heretical doctrines, upon which he disappeared in a deep well at Gaya, leaving neither writings nor disciples behind him; and it is further believed, upon the credit of tradition, that no Buddhists were known in India, until their sect was established by Gautama or Godama, with whom Buddha is frequently confounded. Now, in this mythic account, which is supported by a legend in the Shiva Purana, we have the true genius of Buddhism displayed. Its character throughout is essentially negative. When reduced to its elements or first principles, it consists merely of the rejection of the Vedas and of the religion founded upon them. It is not the Hindu faith; but under this denomination of Buddhism there may be, and in point of fact

there has been included the most various, not to say incongruous, tenets and superstitions which it is possible to imagine; and although its negative character is everywhere the same, its positive character differs in different countries. Hence the Buddhism of China, allied to the institutions, laws, and maxims of Fo and Confucius, is in many respects as different from the Buddhism of the Burman empire as the latter is from the system of religion founded on the Vedas and the Shastras. But, nevertheless, it has some positive general characteristics. The principles of this sect, as established by Gautama, its founder, about five hundred years before Christ, are unknown; but those now ascribed to him, and professed as his alleged revelations, may be very briefly stated. The doctrine and law of Gautama consist chiefly in observing five commandments, and abstaining from ten sins. The five commandments contain prohibitions against killing any animal whatsoever, from the meanest insect up to man; against the commission of theft; against the violation of another man's wife or concubine; against falsehood; and against the use of wine, or any intoxicating liquor or drug, as opium: and an exemption from poverty, misfortune, and calamity is promised to those who keep these commandments during all successive transmigrations. The ten sins consist in the killing of animals, theft, adultery, falsehood, discord, contumelious language, idle and superfluous talk, covetousness, envy or malice, and the following of false gods: and he who abstains from all these sins is said to obtain Sila, while every one who observes Sila, in all successive transmigrations, becomes at last worthy of beholding a god, and of hearing his great voice, and is exempted from the four known miseries, namely, weight, old age, disease, and death. There are also certain positive good works which ought to be practised, such as Dana, which consists in giving alms, and Bavana, which consists in repeating solemnly the three words Aneizza, Docha, and Anatta; the first indicating liability to vicissitude, the second exposure to misfortune, and the third the impossibility of obtaining exemption from these evils. From this statement it appears that the two scales of commandments and prohibitions are singularly ill adjusted to each other; inasmuch as the duties enjoined are only half the number of the sins forbidden, and as the negative and the positive in morals are blended in both.

The worshippers of Buddha contend with the disciples of Brahma for the honour of a high antiquity; and this pretension has been countenanced by some European writers of high reputation. Sir William Jones, for instance, fixes the first appearance of Buddhism about a thousand years before Christ; but his argument rests upon very weak grounds, and, if the Puranas are admitted to be of any authority, it is wholly untenable; for whatever antiquity may be ascribed to Buddha, considered as a manifestation of Vishnu for the purpose of local and temporary delusion, there are clearly no grounds, mythological, traditional, or historical, for placing the origin of this sect higher than the period of Gautama, or about five hundred years before Christ, as already mentioned. What we know with certainty is, that Buddhism, so called doubtless from its peculiar character, once predominated throughout a great part of India; that the doctrines and system of belief adopted by its votaries were in direct opposition to the religion founded on the Vedas; that a deadly hatred arose between the followers of Brahma and the Buddhists, which ended in the expulsion of the latter; that, nevertheless, the Brahmins continued to reverence Buddha as the manifestation of Vishnu, however much they might have detested the sect which called itself by his name; that Buddhism appears to have diffused itself over all the countries from Bengal to China inclusive; that in its character

Budgell. and genius it is extremely flexible and accommodating; and that, in the different countries which it overspread, it appears to have become amalgamated with indigenous local superstitions of almost every description. (See Kennedy's *Researches into the Nature and Affinity of Ancient and Hindu Mythology*, p. 248, et seqq.; *Transactions of the Bombay Literary Society*, part iii. p. 532; Guignaut, *Religions de l'Antiquité*, tom. i. p. 300; Heeren, *Ideen über die Politik*, &c. vol. viii. p. 127, 4th edit.; *Asiatic Researches*, vol. viii. p. 474.) (A.)

BUDGELL, EUSTACE, an ingenious writer, was the son of Gilbert Budgell, doctor of divinity, and was born at St Thomas, near Exeter, about the year 1685. He was educated at Christ Church College, Oxford, from which he removed to the Inner Temple, London; but instead of studying the law, for which his father intended him, he applied to polite literature, kept company with the gentlest persons in town, and in particular contracted a strict intimacy with Mr Addison, who was first cousin to his mother, and who, on his being appointed secretary to Lord Wharton, lord-lieutenant of Ireland, took Budgell with him as one of the clerks of his office. Mr Budgell, who was then about twenty years of age, and had read the classics and the works of the best English, French, and Italian authors, now became concerned with Sir Richard Steele and Mr Addison in writing the *Tatler*, as he had soon afterwards a share in writing the *Spectator*, where all the papers furnished by him are marked with an X; and when that work was completed, he had likewise a hand in the *Guardian*, where his performances are marked with an asterisk. He was subsequently made under secretary to Mr Addison, chief secretary to the lords justices of Ireland, and deputy clerk of the council. Soon afterwards he was chosen a member of the Irish parliament; and in 1717, Mr Addison, having become principal secretary of state in England, procured him the place of accountant and comptroller-general of the revenue in Ireland. But the next year, the Duke of Bolton being appointed lord-lieutenant, Mr Budgell wrote a lampoon against Mr Webster, his secretary, in which his Grace himself was not spared; and upon all occasions he treated that gentleman with the utmost contempt. This imprudent step became the primary cause of his ruin; for the Duke of Bolton, in support of his secretary, got him removed from the post of accountant-general; upon which, returning to England, he, contrary to the advice of Mr Addison, published his case in a pamphlet. Mr Addison had now resigned the seals, and retired into the country for the sake of his health; Mr Budgell had also lost several other powerful friends, who had been removed by death, particularly the Earl of Sunderland and Lord Halifax. He, however, made several attempts to succeed at court, but was constantly kept back by the Duke of Bolton. In the year 1720 he lost L.20,000 by the South Sea scheme, and afterwards spent L.5000 more in unsuccessful attempts to get into parliament. This completed his ruin. He at length employed himself in writing pamphlets against the ministry, and published many papers in the *Craftsman*. In 1733 he began a weekly pamphlet called the *Bee*, which he continued for above a hundred numbers, and which is printed in eight volumes 8vo. During the progress of this work occurred the death of Dr Tindal, by whose will Mr Budgell had L.2000 left him; and the world being surprised at such a gift from a man entirely unrelated to him, to the exclusion of the next heir, a nephew, and the continuator of Rapin's history of England, immediately imputed it to his having made the will himself. Hence the satirist:

Let Budgell charge low Grub-street on my quill,
And write what'er he please except my will.

It was thought that he had some hand in publishing Dr

Tindal's *Christianity as old as the Creation*; for he often Budgell talked of an additional volume on the subject, but never published it. After the cessation of the *Bee*, Mr Budgell became so involved in law-suits, that he was reduced to a very unhappy situation. He was indeed called to the bar, and attended for some time in the courts of law; but finding himself unable to make any progress, and being distressed to the utmost, he determined at length to put an end to his life. Accordingly, in the year 1736, he took a boat at Somerset-stairs, after filling his pockets with stones; ordered the waterman to shoot the bridge; and, whilst the boat was passing under, threw himself into the river. He had several days before been visibly distracted in his mind. Upon his bureau was found a slip of paper, on which were these words:

What Cato did, and Addison approv'd,
Cannot be wrong.

Besides the above works, he wrote a Translation of the Characters of Theophrastus. He was never married, but left one natural daughter, who afterwards assumed his name, and became an actress in Drury-lane.

BUDNÆANS, in *Ecclesiastical History*, so called from the name of their leader, Simon Budnæus. They not only denied all kind of religious worship to Jesus Christ, but asserted that he was not begotten by any extraordinary act of divine power, being born, like other men, in a natural way. Budnæus was deposed from his ministerial functions in the year 1584, and publicly excommunicated, with all his disciples; but afterwards abandoning his peculiar sentiments, he was re-admitted to the communion of the Socinian sect. Crellius ascribes the origin of the above opinion to Adam Neuser.

BUDUN, the name of one of the Ceylonese gods. He is supposed to have arrived at supremacy after successive transmigrations from the lowest state of an insect through the various species of living animals. There have been three deities of this name, each of which is supposed to have reigned as long as a bird takes to remove a hill of sand half a mile high and six miles round, by a single grain in a thousand years.

BUDWEIS, a circle in the Austrian kingdom of Bohemia. It extends over 814 square miles, or 520,960 acres. It is situated in the southernmost part of the kingdom, joining to Bavaria. It comprehends eight cities, twenty-nine market-towns, 891 villages, and 26,985 houses. The inhabitants in 1817 were 170,670, but have since been increasing as in the other parts of the territory. The chief city bears the same name, and is situated on the river Moldau, where it receives the waters of the Malsch. It is a well built ancient place, with a cathedral, several other churches, a monastery, and an institution for military education. It has manufactures of cloth, and for refining saltpetre. The population amounts to somewhat more than 6000. It is in Long. 14. 51. 10. E. Lat. 48. 59. 43. N.

BUDZIAC TARTARY lies on the rivers Dniester, Bog, and Dnieper, having Poland and Russia on the north, Little Tartary on the east, the Black Sea on the south, and Bessarabia on the west. The chief town is Oczakow. It is subject to Turkey.

BUENAIRE, one of the Leeward Islands, in the West Indies, lying east of Curaçoa, and belonging to the Dutch. It is fifty miles in circumference, is mountainous in its appearance, and inhabited chiefly by Indians, with a small mixture of Europeans. It produces nothing but a few cattle, goats, large quantities of poultry, and of late years a considerable quantity of salt. On the south-west side there is a good harbour. It is fifty-two miles east of Curaçoa. Long. 67. 36. W. Lat. 12. 26. N.

BUENAVENTURA, a Spanish settlement and mission

on the coast of New California. Vancouver mentions that the buildings of the mission, the arrangements of the gardens, and the cultivation of the land in the immediate vicinity, are in a style superior to that of any of the settlements in the north. In consequence of the serene weather which prevails here throughout most of the year, the roadstead may be considered as a tolerably good one, and anchorage may be had near the shore. But it is much

exposed to the north-east winds and oceanic swells, which render the communication with the shore very unpleasant. There is a want of rain here, which is rather unfavourable to the raising of European grain; but the soil and climate answer remarkably well for the production of all sorts of fruits appertaining both to the temperate and torrid zones. This settlement was founded in 1782, and contains above 1000 inhabitants. Long. 241. 2. E. Lat. 34. 16. N.

Buenos
Ayres.

BUENOS AYRES,

THE capital of the Argentine republic or united provinces of the Rio de la Plata, is situated in the province of Buenos Ayres, on the southern margin of the river Plata, in South America. This province is bounded on the north by the province of Santa Fè and the rivers Parana and La Plata, on the east by the La Plata and the Atlantic Ocean, on the west by the province of Santa Fè and the Indian territory, and on the south by the country of the Indians. This latter boundary, previous to 1822, was formed by the river Salado. The greatest diameter of the province, then consisting of about 200 miles, extended from the mouth of the Salado, at the bay of Samborombon, in south latitude 36°, in a north-westerly direction, to the Arroyo en Medio, which separates it from Santa Fè, in south latitude 33. 20.; the breadth of the province was estimated at about 70 miles; and the area included about 1518 square leagues.

In 1740 an imaginary line was drawn across the continent, in about 35° of south latitude, to the south of which the Indians were understood to confine themselves, and various forts were constructed for the defence of this frontier; but these limits appear to have been little respected by either party, since the Indians have been in the frequent practice of making incursions into the frontier provinces, and plundering their inhabitants, or interrupting the commercial intercourse maintained between the capital and the interior provinces situated along the eastern base of the Andes. The inhabitants of the provinces, and especially those of Buenos Ayres, have been gradually extending their *estancias* or breeding farms into the territory of the Indians south of the river Salado, and more especially on the sea-coast of the Atlantic. To render these possessions more secure, and to extend the jurisdiction of the government of Buenos Ayres, an attempt was made in 1822 to obtain, by purchase from the Indians, the cession of an extensive tract of land situated to the south of the Salado. The principal Indian caziques having assembled to meet the commissioner from the government of Buenos Ayres, consented to sell their lands, but were so exorbitant in their demands that the negociation failed, partly through the influence exercised by those tribes residing near the Andes and in Chili, who were less immediately interested in the sale of these lands. The failure of these laudable endeavours to accomplish this object by amicable means has led to consequences injurious not only to the Indians, but to the industrious inhabitants of the province of Buenos Ayres. Both parties have had recourse to arms. The Indians have made repeated irruptions into the possessions of the latter, carrying off great quantities of cattle, and committing other atrocities. The government of Buenos Ayres, on the other hand, has sent various expeditions into their country; built fortresses; and established military posts at Laguna Blanca, Cruz de Guerra, Federación, and other places, on an advanced frontier, extending nearly to the 38th degree of south latitude, and formed in part by the insulated ranges of mountains known by the names of Las Sierras del Volcan, del Tandil, and de la Ven-

tana. Along the coast of the Atlantic they possess establishments still farther to the south; the foundation of a new city, called New Buenos Ayres, was laid in 1827, in an eligible situation to the north of the mouth of the river Colorado, which enters the Atlantic in latitude 39. 40. S.; and they have long possessed a fortress and agricultural settlement near the mouth of the Rio Negro de Patagones, called El Carmen de Patagones, with which Buenos Ayres has hitherto communicated only by sea; but measures have been taken to establish a more direct communication by land with these dependencies. It is evidently the intention of the government of Buenos Ayres to extend their frontiers to one or other of these rivers; an undertaking of great importance, as it will not only afford protection to the numerous industrious settlers established to the south of Buenos Ayres, by forming a defensible and well-defined frontier, but will open up an extensive line of water communication with the interior, and facilitate the conveyance of the valuable agricultural products of the fertile provinces which extend along the eastern base of the Andes.

This extensive territory, south of the river Salado, which has in this manner been added to the province of Buenos Ayres, possesses a fine climate and very fertile soil. It is considered as still better adapted for agricultural purposes than that around Buenos Ayres, especially for the cultivation of wheat, which is produced there in great abundance, and with more certainty than at the latter place. The number of *estancias* already formed in this territory is very considerable, having reached the Sierras del Volcan and Tandil, and they are yearly augmenting in number and importance; only requiring the fostering care of a paternal government, and protection from the incursions of the Indians, to insure their prosperity. Now that the civil dissensions have terminated, it is expected that the inhabitants of the provinces which are in contact with the Indian territory to the south will unite in the important undertaking of forming a well-arranged frontier, connected by fortifications; previously obtaining the consent of the Indians by purchase and other conciliatory means, before having recourse to the force of arms.

The whole extent of the province of Buenos Ayres forms one continuous and unbroken plain, of great fertility, and covered with perpetual verdure. Proceeding from the city upwards along the margin of the river Plata, the ground is somewhat more elevated than the surrounding country; but to the westward the same level surface extends across the Pampas, until it reaches the confines of the province of Cordova, where the country gradually rises in elevation as it approaches the base of the mountainous range of Cordova. To the south and south-east the country presents the same monotonous appearance, unless where interrupted by some inconsiderable elevations near the origin of the river Salado, and farther south by the insulated range of mountains already mentioned, called Tandil, Volcan, and La Ventana.

Throughout this territory, especially towards the south, and in the vicinity of the river Salado, there is a consi-

Face of the
country.

Buenos
Ayres.

derable number of lakes, to many of which that river forms an outlet. Some of these are very shallow, and are only filled with water during the rainy season, at which times also considerable tracts of country become so much inundated that they cannot be passed except on horseback. On the approach of summer, and when exposed to the powerful influence of the sun, the evaporation is so great that these inundations and many of the lakes disappear, leaving the country in a very dry and parched condition, and very deficient in the necessary supplies of water.

To this great equality of surface may be attributed the very few rivers, even of moderate size, which are to be found in such an extent of country. They are in general easily forded, unless when swelled by long-continued rains. The small river called Riachuelo, or the Narrow River, which joins the river Plata about a mile to the south of the city of Buenos Ayres, affords a good example of their size. Near its mouth it is not above thirty yards in breadth, and has a depth of water not exceeding two fathoms; consequently it does not admit even moderate-sized vessels, but affords an excellent haven for small vessels and lighters, employed in the landing of goods and the embarkation of produce.

The Rio Salado, which is the largest of these rivers, rises on the confines of the Pampas to the south of the fort of Melincue; runs in a south-easterly direction, being connected in its course with a considerable number of lakes; and enters the Atlantic at the Ensenada de Samborombon, near the mouth of the river Plata. At twelve leagues from its mouth it is about 600 feet in breadth, and so deep that passengers require to be ferried over. The importance of this river was unknown until the late war with the Brazils, when, in consequence of the strict blockade of the port of Buenos Ayres by the Brazilian squadron, all access to the country by the ordinary channels was cut off. The inhabitants were compelled by necessity to find out other avenues by which to communicate with the sea; and as, on examination, the mouth of the river Salado was found to be well adapted for the admission of shipping, it became during the war the principal rendezvous for the Argentine privateers, their prizes, and other vessels; a circumstance which for a time gave a new aspect to that part of the country. But much inconvenience was experienced in carrying on the traffic thus created, from the want of good roads. The discovery of so good a port for small vessels at the entrance of the river Plata will, however, prove of importance to this part of the country, when the population has been augmented, and greater advances have been made in agricultural industry, for which the district in question is peculiarly well adapted. A number of small rivers rise in the hilly country near the Sierras del Volcan and Tandil, and run into the Atlantic.

The Ensenada de Barragon, distant about thirty-six miles to the south-east of Buenos Ayres, forms a safe and commodious anchorage for shipping, which is well protected from the prevailing winds; but it is not much frequented except by vessels engaged in the mule trade, or requiring to be careened. The province contains various thriving and populous towns and villages, among which may be enumerated San Jose de Flores, San Isidro, Quilmes, Las Conchas, Luxan, Chascomus, San Pedro, San Nicolas de los Arroyos, and others. The latter, San Nicolas, which is situated at the north-western extremity of the province, on the margin of the river Parana, is likely to become a commercial station of much importance, from its vicinity to the Rio Tercero, and its favourable position for communication with the provinces of Cordova and of Cuyo.

The level surface which so uniformly characterizes the whole province of Buenos Ayres affords little scope for variety in its vegetable productions; still the aspect of the country is marked by many striking peculiarities. Different kinds of clover and other leguminous plants, intermixed with grasses, constitute the great mass of the vegetation; give to the country its verdant appearance; and form an inexhaustible source of nutriment, not only to the deer and other wild animals which are so abundant, but to the numerous herds of cattle and horses which may be seen grazing in all directions.

The country is naturally destitute of wood, and, with the exception of an occasional natural copse of the *tala* shrub, of very inconsiderable height, nothing resembling trees is to be seen. The ombu (*Phytolacca dioeca*), however, sometimes makes its appearance, to diversify the scene and relieve its monotony. Trees of this kind generally point out to the traveller the site of some habitation, near which they are usually planted; since, from the great rapidity of their growth, they soon become conspicuous at a distance, and afford a grateful shade to the inhabitants during the hot season of the year. They are otherwise very useless, on account of the spongy nature of the trunk, which is so soft that it has sometimes been used as wadding for artillery during the wars which prevailed in the country.

In the more cultivated districts of the province, and especially in the neighbourhood of the city, numerous plantations are met with of peach trees, which are cultivated for fire-wood, and form a very profitable investment of land and capital, as they grow with great luxuriance, and may be cut down every four years; so that by dividing a plantation equally, a fourth part may be cut down yearly, which is sure to meet with a ready sale, being the principal fire-wood used in Buenos Ayres. The fruit, which is produced in great abundance in such plantations, is applied to no useful purpose except the feeding of pigs and poultry.

The immense forests of thistles which spring up at certain seasons of the year tend more to diversify the scenery of this country than any other cause. These consist of two species, well known in Europe, but principally of the cardoon (*Cynara Cardunculus*), and have both in all probability been introduced from Europe. Having met with a soil and climate congenial to their nature, they have extended themselves over an immense tract of country, in some directions upwards of one hundred miles; and they are in such abundance, and so vigorous in their growth, as to exceed in height the tallest man mounted on horseback, and to form an apparently impenetrable thicket on each side of the road. This scene may be witnessed in its greatest perfection during the early months of summer, more especially in November; and contrasted with the same country during the winter season, when the whole has disappeared from the surface of the earth, it conveys to the mind a striking instance of the luxuriant vegetation of the country. When young and tender, these thistles constitute a favourite article of food for cattle, which form numerous and devious paths in the thickets when in search of food at a later period of the season. Along these they are easily traced by the practised eye of the *gaucho*, who fearlessly rides along, his body and limbs being protected from injury by means of a portion of dried bullock's hide, judiciously placed before him, and extending a little way on each side of the horse. These thickets have on some occasions been used as a place of concealment by such as lay in wait to attack the unwary traveller, and have occasionally been employed in aid of military operations during the civil dissensions which have so frequently prevailed in these countries since their separa-

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tion from the dominion of Spain. In autumn the same scenery assumes a desolate appearance, as the thistles are then withered and drooping, and become so dry, that if by any accident they catch fire, and a breeze of wind prevails, the conflagration spreads with such rapidity in all directions as occasionally to destroy much agricultural produce, and great numbers of cattle and other animals who are unable to escape. In the neighbourhood of the city at this season they are cut down in great quantities, and sold for the purpose of heating ovens. The florets of this thistle are in common use in the country for the purpose of coagulating milk, which they accomplish in the same manner as rennet. A quantity of these florets is tied up in a rag and stirred about in warm milk for a few minutes. This thistle is also used as a vegetable at table. The tender footstalks of the leaves, and the young stems, when boiled and the outer skin removed, have the flavour of artichokes.

Animals.

Deer are so abundant in those parts of the country which are least inhabited, that some hundreds may occasionally be seen at the same time along the horizon; but they are not much molested, as their flesh is of little value in a country where good beef is so abundant. The *biscachos* are very numerous in the province of Buenos Ayres. This animal resembles a rabbit in appearance and habit, but is somewhat larger. *Biscachos* burrow in the ground, and have numerous openings to their subterranean abodes, where they remain concealed during the day-time; but they sally out at night and devour great quantities of grass, corn, and green crops. Their holes, which are numerous, and covered over with grass and herbage, are dangerous to those riding on horseback, and occasionally give rise to accidents. They may be seen in considerable numbers at the mouths of their holes about sunset, and are caught in traps, or by inundating their dwellings, which obliges them to issue out, when they are easily killed. Their flesh is considered as good eating. Various species of armadillos are found in the provinces, where they are distinguished by the names of *quirquincho*, *mataco*, and *mulito*. They are easily caught when found sleeping in the sun, and are much prized as an article of food when roasted in their shell. The *zorino*, which is not unfrequently met with, is about the size of a rabbit, of a chestnut colour, and marked on each side by two white lines. Its appearance is handsome, but when attacked or molested it ejects with considerable force a liquid possessing an odour so intolerable, that its vicinity is dreaded by man, and every animal who has once experienced its effects. This serves it as a powerful means of defence against every enemy. If caught and suspended by the tail, it is deprived of the power of emitting this fluid, which is contained in a bag at the root of the tail.

The South American ostrich or *nandu* (*Struthio Rhea*) is met with in considerable abundance on the Pampas, usually in coveys of twenty or thirty in number, gliding rapidly along the plain. These birds are hunted by the natives on horseback at full speed, and are caught by means of the *bolas*, formed of three balls or round stones, covered with hide, and united to one common centre by thongs, each a fathom in length. After acquiring an impetus by whirling them round the head, the *gauchos* throw them with such dexterity that the bird seldom escapes. The young are easily domesticated, but become troublesome from their propensity to swallow money, or any thing metallic which they can find. Their food in the natural state consists of seeds, herbs, and insects. When young, their flesh is considered as palatable. They lay a number of eggs in one nest, which is lined with dry grass, and not always in very concealed situations. They seem to have an exact knowledge of the number of their eggs, as any attempt to diminish or increase their number, or even to handle them, inevitably

leads to the destruction of the whole, and the desertion of the nest. As a proof of their provident care for their young brood, it is affirmed that the parents roll several eggs to a little distance from their nest, and break the shell, so that they become filled with maggots and insects, which supply suitable food for their young brood on coming forth. The male bird takes charge of rearing the young brood, which he performs with great attention. When two male ostriches thus employed meet each other, they fight for the supremacy, the victor in the combat usually carrying off the two broods.

The country abounds in game of various descriptions, especially wild ducks, pigeons, partridges, and quails: the latter are so stupid as to allow themselves to be caught with little trouble, by means of a noose fastened to the end of a cane; or by riding round them in the form of a circle, they may be gradually approached so close as to be killed by the stroke of the rider's whip. They are exceedingly abundant, and being easily caught, are much used as an article of food. On the banks of the rivers and lakes are found great abundance of water-fowl; and in moist places a bird closely resembling the lapwing of Europe in appearance and habit, but having a spine of nearly an inch long projecting forward from each shoulder, and serving it as a powerful weapon of offence. Venomous reptiles are rarely or never met with in this province; and the inhabitants are exempt from the annoyance of those numerous insects which abound so much in the provinces farther to the north. Mosquitos, however, occasionally occur at certain seasons of the year, and in low damp situations. Fleas are also abundant where sufficient attention has not been paid to ventilation and cleanliness.

Bones of the megatherion, and other extinct animals, Fossil have been discovered in the alluvial soil of the province remains. of Buenos Ayres. One of the most perfect specimens of the bones of this animal was found on the banks of the river Luxan, fifteen leagues from Buenos Ayres, when forming some excavations, in the year 1789. It was removed entire to Spain, and is now in the cabinet at Madrid. More recently a tooth of the same animal was discovered near Areco, about sixteen leagues farther west; and only a few years ago various bones of a similar description were found near Los Desmochados, on the south side of the river Tercero. Three skeletons of the mastodon were recently discovered to the south of the river Salado, by Mr Woodbine Parish, his Britannic majesty's late consul-general at Buenos Ayres; and one of these skeletons, in nearly a complete state, has lately been brought to England by that gentleman. The circumstance of these organic remains having been found in a shell somewhat resembling that of the tortoise, gives much additional interest to this discovery. Occurrences such as these lead to the conclusion that in former times these tribes of animals have existed in considerable numbers on these alluvial plains; and many similar discoveries may be anticipated in future.

The mineral productions of this country possess very little interest. A rock or a stone is scarcely anywhere to be seen throughout the province. Some gypsum has been found in the neighbourhood of Buenos Ayres, and lime in several parts of the country. Such stones as are required for paving the streets, or in building, are brought from the island of Martin Garcia, at the mouth of the Uruguay, or as ballast from Europe. Many of the lakes to the south of Buenos Ayres are strongly impregnated with salt, and hence is derived the name and quality of the water of the river Salado. Salt, however, exists in greatest abundance and purity at Las Lagunas de las Salinas, situated in lat. 37. 0. S. in a south-west direction from the city, and not

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far distant from the mountains called La Sierra de la Ventana. At these lakes, when the evaporation has been considerable, salt is procured in great quantities; and to obtain supplies of this article, considerable numbers of Indians and Creoles are attracted at certain periods; but owing to the distance and expense of land-carriage, little

of it reaches Buenos Ayres, as it can be obtained cheaper from England, and of a superior quality.

The climate of Buenos Ayres, as its name indicates, is excellent and salubrious, being by its situation equally removed from the extremes of heat and cold. In general, the atmosphere is clear and the sky unclouded.

Meteorological Observations in Buenos Ayres during 1822.

1822.	Thermometer.			Barometer.			Hygrometer.		Winds.				Weather.			
	Max.	Mean.	Min.	Max.	Mean.	Min.	Days Humid.	Days Dry.	North to East.	North to West.	South to East.	South to West.	Clear.	Foggy.	Rainy.	Thunder and Lightning.
January.....	91	71.82	60						12	3	9	6	14	4	13	3
February.....	89	73.00	58	30.04	29.58	29.21	19	9	12	8	3	5	16	4	8	0
March.....	82	70.83	53	29.88	29.61	29.33	20	10	12	6	6	7	23	4	4	1
April.....	78	62.04	43	29.82	29.73	29.46	22	8	7	8	4	11	24	4	9	0
May.....	68	58.31	44	30.18	29.76	29.21	30	0	13	7	2	9	24	4	3	2
June.....	66	54.32	40	30.05	29.77	29.23	30	0	14	5	2	9	16	11	3	3
July.....	68	52.55	38	30.17	29.65	29.21	31	0	13	4	7	7	14	11	6	5
August.....	66	51.83	36	30.21	29.84	29.51	31	0	18	3	6	4	16	13	2	0
September.....	72	54.64	42	30.41	29.74	29.32	30	0	13	3	11	3	16	6	8	3
October.....	81	58.91	46	30.13	29.67	29.24	30	1	17	5	5	4	15	8	8	3
November.....	88	68.43	56	29.91	29.61	29.17	28	2	23	1	5	1	16	7	9	3
December.....	86	70.91	62	30.00	29.45	29.15	23	8	16	3	6	6	15	4	12	5
							294.	38	170	56	66	72	209	80	85	28

The preceding table indicates the state of the weather during the year 1822, and is given as the most complete which can be obtained, although it does not denote the extremes of heat and cold which occasionally take place during other years, and appears to have included a greater proportion of rainy days than usually occur. In January 1823 the thermometer rose as high as 94°, and in February and March following to 93°; and during the winter months of 1820 it often fell to the freezing point, and thin crusts of ice were formed on the shallow pools around the city. The mean temperature of 1822 was 62°·30 of Fahrenheit, and the mean height of the barometer for eleven months 29·67 inches, showing the elevation of the city above the level of the sea to be about 300 feet. The north and north-east winds, especially the former, which sweep over the low and wooded country of Entre Rios and the other districts extending along the margins of the rivers Parana, Uruguay, and their tributaries, are generally loaded with moisture, and succeeded by heavy rains. When the winds have prevailed for some time, and before the rains fall, the atmosphere generally becomes so clear and transparent that objects may be seen distinctly at a great distance. During its continuance the moisture of the atmosphere materially affects the health and feelings of the inhabitants. The *pamperos*, or south-west winds, which traverse a comparatively dry tract of country, are by far the most agreeable and wholesome which prevail in this country; and from this quarter the winds sometimes blow with very great violence. During the summer months a refreshing breeze arises periodically every evening from the river to the eastward, and is evidently produced by causes similar to those which operate in equatorial regions. Storms of thunder and lightning occasionally prevail at Buenos Ayres, and are sometimes very violent and terrific. A remarkable change, indeed, has of late taken place in the climate of Buenos Ayres, for since 1829 it has rained so very little as materially to disappoint the hopes of the husbandman and the breeder of cattle. In the early part of 1832 the drought had reached to such a height as to convert the whole province into one continued bleak and dreary desert, and to produce phenomena

which had never before been witnessed even by the oldest inhabitants. On some recent occasions such dense clouds of dust have been raised by the winds, as to obscure the rays of the sun completely at mid-day, and envelope the inhabitants in almost total darkness. When the rains at length commenced in March, the water in its passage through the air intermingled so completely with the dust suspended in the clouds through which it fell, as to descend in the form of showers of mud, and on some occasions gave to the white exterior of the houses the appearance of having been plastered over with earth. Many flocks of sheep were smothered on these occasions by the dust, in a similar manner as in the snow-storms which occur in the mountains of Scotland.

As an evidence of the healthiness of this climate may be adduced the frequent instances of longevity which occur. Epidemic diseases are of rare occurrence, and there are few complaints arising from local causes. Consumption, pulmonary affections, and inflammatory complaints, are those which principally prevail. In the country the inhabitants enjoy almost uninterrupted good health. The ravages of small-pox, formerly very destructive in this country, have been arrested by the introduction of vaccination, for which an institution has been established under the direction of Dr Seguro, whose exertions in the cause of humanity are well known and appreciated by his countrymen. The benefits of this institution have been widely extended all over these provinces, and vaccination has been introduced to a considerable extent among the Indians to the south.

The city of Buenos Ayres, or, as it was formerly called, *Nuestra Señora de Buenos Ayres*, was founded in 1535, by Don Pedro de Mendoza, and so named in consequence of the great salubrity and purity of the air. It is situated on the southern margin of the river Plata, on a rising ground elevated about thirty-five feet above the surface of the river, and in long. 58. 23. 34. W. and lat. 34. 36. 29. S. from Greenwich. It is distant ten leagues from Colonia, situated on the Banda Oriental, at the opposite side of the river, and seventy-two leagues from Cape Santa Maria, at the mouth of the river Plata.

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The city is seen to advantage from the river, its site being somewhat more elevated than the surrounding country. It occupies a considerable extent of ground, being in its longest diameter, which runs parallel with the river, about two miles, and in breadth about a mile and a half. All the streets cross at right angles, and at regular intervals of about 150 yards from each other; and they are of moderate breadth, with pavement on each side, and hollow in the middle. They were formerly very ill kept, and with numerous *pantanos* or quagmires, especially near the outskirts of the town; but since the establishment of an efficient and well-regulated police in 1821, these defects have in a great measure been removed, and the streets well cleaned. Most of the principal streets have been well paved and lighted. They have all been systematically named, and the houses are regularly numbered. A street patrol has been formed, whose duty it is to repress irregularities, which were formerly so frequent, and to preserve order and tranquillity. It is only in the more central parts of the city that the houses are built adjoining to each other, so that the four sides of the square form a continuous line of houses, no access being obtained to the interior of the square excepting through the houses. Formerly they were almost all flat roofed, with a parapet before and behind, and afforded, by means of these *azoteas*, a ready communication between the inhabitants of the square, without their persons being exposed to the view of those passing along the streets. From this circumstance originated that singular and efficient mode of defensive warfare which was first practised in Buenos Ayres, and has recently developed itself so successfully in Europe; every successive square of buildings thus forming a formidable line of defence to the entrance of an invading force, and the defenders being able to take aim at the assailants with little exposure of their bodies. Hence the very unequal contest, and the great loss of life, which attended the attempt of the British troops under General Whitelocke to take the city by storm. More recently the form of the houses has been somewhat altered, by the addition of *altos* or upper stories, balconies, and various other architectural improvements. The houses were formerly all built of mud; but one of the jesuits introduced the practice of employing bricks and lime, which is that now generally in use, excepting in the houses of the lower classes towards the outskirts of the city. The walls formed of brick and lime are plastered outside with stucco or cement, and whitened.

The entrance to every house is by a large massive gate, which leads to a square court or *patio*, round which are situated the various apartments with which it communicates. It is usually paved with brick, and has generally formed underneath a large cistern or *aljibe*, in which the rain water is collected from the court and tops of the houses, and preserved for the use of the family. The sides of the court and front of the balconies are frequently ornamented with vines or other climbing and odoriferous plants. The air plants (*Tillandsia*), of which several very beautiful kinds are natives of this country, are also used to ornament dwelling-houses; and when in flower they have a very brilliant appearance, and excite additional interest from the peculiarities of their nature, requiring no other nourishment than what they receive from the atmosphere, and demanding no further care than that of attaching them to the iron railings of the windows.

That part of the house which is situated on each side of the entrance is commonly used for shops or warehouses, and those apartments communicating with the court as public rooms, the bed rooms being situated in the *altos*, or around a second court or *patio*, to which there is a passage leading from the first. Beyond these are situated

the servants' apartments, the kitchen, offices, stable, and sometimes a small garden.

The windows, which look into the court or the street, are large, occupying nearly the whole height of the apartment, and are secured from intrusion by perpendicular bars of iron, fitted in a frame so as to occupy its whole extent; a precaution necessary to secure the interior of the houses, as it is customary to throw open the casements to admit the cool air of the mornings and evenings; while the seats inside form the usual resort of the female inmates during their hours of relaxation, and when disposed to see and be seen by those passing along.

The interior of the houses is much better calculated for the warm season of summer than for the winter. The apartments are large and spacious, but somewhat gloomy, from the deficiency of windows and ornaments, the walls being generally white-washed; while the floors are formed of tiles, bricks, or more recently of wood. They are damp and cold in winter, from the defective ventilation and the want of chimneys, against which strong prejudices long existed. The only substitute used was a large *brasero* or chafing-dish, of a circular form, placed in a wooden frame on the floor, and filled with burning charcoal, round which the inmates assembled; but unless the doors were kept a little open to allow the escape of the noxious air which was generated, it proved most injurious to the health of those exposed to its influence. The example of the English, who introduced chimneys into their houses, and the superior comfort and healthiness which they enjoy in consequence, has materially tended to remove the existing prejudices; and consequently the houses of the natives are now also, for the most part, provided with chimneys. The interior arrangement of their houses has also been greatly improved in other respects; and they are now commonly furnished in the English or French style, and in every respect are more comfortable than formerly.

There are about ten public squares or *plazas* in the city of Buenos Ayres, some of which are of small dimensions, and principally in use as market-places. The largest, which is of considerable size, is situated opposite to the fort, and is divided into two unequal parts by the *Alcova*, a long building extending from one side to the other, and containing a range of small shops, with a corridor on each side, affording shelter to the public and the market people. That part of the square which is next to the fort is used as the principal public market. The other division, which is by far the largest, and is named Plaza de la Victoria, forms the principal parade for exercising troops, and for the celebration of religious and national festivals. In its centre is placed a pyramid to commemorate the revolution, having an emblematic figure at each of its four corners, indicative of Justice, Science, Liberty, and America, the whole being inclosed by a light railing. On the west side of the plaza, opposite to the *Alcova*, is situated the town-house or *Cabildo*, a large and fine edifice, in which are held the different courts of justice, the meetings of the municipality, the police establishment, and the various offices belonging to these departments.

The cathedral is situated on the south side of the plaza, and, although not finished according to the original design, it occupies an extensive space of ground. It possesses considerable claims to architectural beauty, and its interior is adorned with some large scriptural paintings. The other churches, which principally merit attention for their architecture and extent, are those of San Francisco, La Merced, Santo Domingo, and San Nicolas; besides which there are various churches, in all about fifteen, throughout the city. The university, which is situated in the vicinity of the principal square, was built by and for the use of the Jesuits when established in the country, and is one of the

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most substantial public buildings in the city. Within these few years an episcopal chapel has been built by the British residents, forming a new and interesting object in this part of the world.

The theatre, which is much frequented both by natives and foreigners, is of mean exterior appearance, but of considerable size. Besides the Spanish plays and farces performed here, there are frequent Italian operas, which are generally well represented, and seem very congenial to the public taste. A mint has been recently formed in Buenos Ayres, and is situated in the *Consulado*, near the plaza. The machinery has been erected under the able superintendence of Mr Miers, and is so complete in all its details as to be highly creditable to all concerned. The political state of this country since its completion has, however, been such as to prevent this establishment from being used for its original purposes.

The post-office is under the charge of a director, and is managed with regularity, but is very defective in some of its details. The mails are conveyed by riders on horseback, and with considerable dispatch and regularity; being sent weekly to Chili by way of San Luis and Mendoza, and to Bolivia by the route of Cordova, Tucuman, and Salta. On the arrival of letters from any place, a list is made out of the whole; and any one applying for the letters receives them on paying the postage; a practice which often leads to the loss of letters, and other numerous inconveniences.

The fort, which is opposite the *Alcova*, is situated on the banks of the river Plata, and in front of the centre of the city. It is built of stone, and is of considerable strength, being well mounted with cannon, but can never be of much importance as a fortification, since no vessel of war can approach within gunshot of it; and the cannon are therefore only useful for firing salutes. It has a small garrison, and contains apartments for the president and his ministers, and the various public offices connected with the government.

In the neighbourhood of the fort there was recently a pier or wharf, used for landing passengers. It was built of stone and earth, the former brought from Martin Garcia, and cost the Spanish government half a million of dollars; but it was of so little use even in landing from boats, except when the river was full, that it has been allowed to fall into decay, and has now almost wholly disappeared. The usual mode of landing goods and passengers is by carts with high wheels, which are in constant attendance; and sometimes, when the river is low, they have to proceed a quarter of a mile into the water before reaching the boat, owing to the shallowness of the river.

The level space which intervenes between the margin of the river and the more elevated ground on which the city is placed, rises very little above the level of the river. At the end nearest the fort is situated the *Alameda*, or public promenade, along which are planted rows of Lombardy poplars. To this place the citizens resort in the evenings and on holidays; but, as a place of recreation, it is very inadequate to the wants of so large and populous a city. Various improvements are now, however, in progress, and a subscription has been raised by the inhabitants to inclose the whole with a handsome iron railing. The banks of the river to a considerable extent, where they are covered with green sward, are usually occupied by females employed in washing and drying their clothes; and numerous parties of bathers may be seen during the summer months enjoying the refreshing influence of the waters of the river. The further extremity of this track often presents a busy and animated scene, being the resort, on their arrival and departure, of the numerous troops of waggons which carry on the traffic with the interior provinces. On the rising ground in this neigh-

bourhood is situated the British Protestant cemetery. Proceeding to the south-east along the margin of the river, the Riachuelo presents itself, having a circular basin at its mouth, in which are received small vessels and lighters; and in its neighbourhood are situated the *Saladeros*, and other establishments for slaughtering cattle, and preparing for exportation the various productions of the country. Before reaching this rivulet, the elevated bank on which the city stands has terminated.

The markets are abundantly supplied with provisions, such as beef, mutton, pork, poultry, and game of various kinds, and so moderate in price, that excellent beef and mutton may be purchased at one halfpenny per pound; and pork, veal, and lamb, at from one penny to three halfpence per pound. Fish are also obtained in great abundance, at a moderate price and of good quality. They are necessarily all fresh-water fish, and consist principally of the *pexerrey* or king's fish, the *dorado*, the *bagre*, *lisa*, and a variety of others. Vegetables are good and plentiful, but expensive, excepting pumpkins and Indian corn, both of which are cheap, and much used for culinary purposes. Fruit, with some exceptions, is not obtained in such variety, or of so good a quality, as the climate is calculated to produce if its cultivation were more carefully attended to. Melons, musk-melons, *sandias* or water-melons, oranges, lemons, figs, pomegranates, and quinces, are the best and most abundant. Peaches are in immense abundance, but of inferior quality, as their cultivation is but little attended to. Potatoes do not seem to thrive in so tenacious a soil, and are often imported from England. All the vegetables and fruit produced here, with few exceptions, appear very susceptible of improvement, and many additional kinds will be introduced as industry advances. The vine answers very well, but has hitherto been cultivated only in gardens to a very limited extent. Milk is carried about in jars by boys on horseback, and is expensive, considering the abundance and cheapness of cows; but the dairy has been little attended to in this country, excepting by the foreigners settled there, who almost monopolize the manufacture of butter and cheese, which they sell at high prices. Bread is also an expensive article of consumption.

Water for culinary and domestic purposes forms an expensive article of housekeeping, as every family which has not in the house a cistern of rain water is obliged to purchase water from the river Plata, brought in carts to all parts of the city, and sold at about threepence a barrel of four gallons. The carts formerly employed for this purpose were of a large and clumsy construction, but they have been greatly improved of late by the foreigners settled there, some of whom have engaged in this lucrative occupation. The water obtained in this country from wells, which are necessarily very deep, is of an inferior quality, and unfit for washing or other domestic purposes, in consequence of being impregnated with saline or calcareous matter from the subsoil or *tosca*; consequently a plentiful supply of good water is a great desideratum in this city. An attempt was made in 1824 to obtain supplies of this necessary article by boring, and an engineer was brought from England with the requisite machinery for this purpose. It was tried principally at the *Retiro*, the most elevated ground in the vicinity of the city; but after penetrating a hundred and seventy-five feet into the earth, and expending considerable sums of money, the undertaking was abandoned, because, much to the disappointment of the government and the inhabitants, no water had been obtained. It does not, however, appear so very difficult an undertaking to obtain a plentiful supply of excellent water from the river, which is only distant a few hundred yards from the *Retiro*, where a large reservoir might be formed, and the city supplied by means of pipes

from this source. The water might be conveyed by a canal or tunnel to the base of the *Retiro*, which is not forty feet above it in level, and raised by means of machinery similar to that which is employed in mines for emptying them of water.

Fuel is also an expensive article of consumption in Buenos Ayres, the coal used there being brought from England, and fire-wood from Entre Rios and the islands of the Parana and Uruguay. Considerable supplies, however, are furnished by means of the peach trees, which are cultivated very generally in the neighbourhood.

All vessels coming to Buenos Ayres, excepting those of a small draught of water, usually anchor in the outer roads, distant about eight or nine miles from the shore, where there is upwards of three fathoms of water. In this situation they usually embark and disembark their cargoes by means of lighters; but when unloaded and waiting for cargoes, they generally come into the inner roads, distant only about two miles from the shore, where the water is much shallower. In neither of these situations are they well protected from the storms blowing from the eastward; but the most violent winds which prevail here are the *pamperos* from the westward, and during these the shipping is sufficiently sheltered by the land.

The river Plata throughout its whole extent, as if to compensate for its great breadth, is extremely shallow, and requires very careful navigation even for vessels of moderate size. The direction of the winds, when strong or long continued, very much influences the quantity of water contained in the river: thus, when they blow from the eastward up the river, the flow of the water downwards is so much impeded, that it accumulates greatly, and the level rises. A remarkable instance of this occurred in 1820, when, during a violent gale of wind from the east, which drove upwards of twenty vessels on shore, the tract of land situated along the margin of the river was overflowed and covered with the cargoes and remains of the wrecked vessels. On the contrary, after long-continued and violent *pamperos* or westerly winds, the flow of the waters of the river is so much accelerated as to leave its channel comparatively empty; an occurrence which has been frequently observed. On one occasion, during the British expedition against Buenos Ayres, this took place to such an extent that many of the vessels were grounded, and one was left in such shallow water as to have been actually boarded and taken possession of by a party of *gauchos* on horseback; and in the first volume of the *Naval Chronicle* a still more remarkable occurrence of this kind is recorded. "In 1793 the waters of this river were forced, in the month of April, by a most violent current of wind, to the distance of ten leagues, so that the neighbouring plains were entirely inundated, and the bed of the river left dry. Ships which had been sunk in the river for upwards of thirty years were uncovered, and, among others, an English vessel which was cast away in the year 1762. Several persons repaired to the bed of the river, where they could walk about without wetting their feet, and returned laden with silver and other riches which had been long buried under the water. This phenomenon continued three days, at the end of which the wind ceased, and the water returned with great violence to its natural bed." Such an occurrence, although apparently somewhat exaggerated, may to a certain extent be accounted for by the inconsiderable depth of water which prevails throughout the greater part of this river, and the great extent of surface exposed to the influence of the wind.

The breeding and rearing of cattle constitutes by far the most important and extensive branch of agricultural industry in this province, which, in all directions excepting in the immediate vicinity of the city, is covered with

estancias or breeding farms, which are considered as the most profitable investments of capital, the increase of stock being so rapid under ordinary circumstances as amply to repay the labour and expense of these establishments. The number of cattle which formerly existed in this country almost exceeds belief. Before the revolution they were often killed merely for the sake of their hides, and were generally purchased at a dollar each. But since that time their value has greatly increased, owing to the increased demand for exportation, and the diminution of numbers occasioned by the political occurrences which took place subsequent to that period; but even at present their number is very considerable, and they are sold at from five to eight or ten dollars each. The size of the *estancias* is sometimes very considerable, comprising many square leagues; and the number of cattle on the largest may vary from twenty to forty or fifty thousand. Every proprietor can easily distinguish his own cattle and horses by a mark branded on each of them; the period of the year when the young animals are collected to undergo this operation being a time of festivity and enjoyment. At each *estancia*, after stated intervals, a *rodeo* is held, when all the cattle are collected together and examined, and those which have strayed from the neighbouring estates are driven back by the *peons* or farm servants, who attend on such occasions from the surrounding *estancias*, and the animals are thus prevented from straying too far. They are remarkably fond of salt, and sometimes travel great distances to feed on this substance at the lakes and other places where it abounds. It is a common observation, that the flesh of those cattle and sheep who feed in districts where salt abounds is much more savoury than any other; and every circumstance tends to prove that salt powerfully assists the process of digestion in these animals, as well as in the human species. In consequence of the diminution which had taken place in the number of cattle, a law was enacted prohibiting the slaughter of cows, so as to encourage by every possible means the increase of this staple article of produce.

Horses are likewise very abundant. They are from fourteen to sixteen hands high, hardy, and capable of undergoing a great deal of fatigue in the performance of long journeys. Their usual pace, which is a canter or gallop, is very easy, and causes little fatigue to the traveller. Their price varies from four or five dollars to eighteen or twenty, according to the quality and demand; but they have occasionally been purchased in large quantities, for the use of the government, at three dollars or twelve shillings each. The large Flemish or dray horse has recently been introduced into the country, with the view of employing it in the traffic with the interior. A great prejudice exists here against using mares for the saddle; and such is the ridicule excited among the natives by their use, that only some foreigners have as yet ventured to introduce the custom. They are only useful for breeding and treading out corn, and may be purchased at half a dollar or two shillings each. They are often bartered or sold to the Indians, who use them as their principal article of food, and prefer their flesh to any other. This practice has exercised a remarkable influence on the mode of warfare which these tribes have carried on against the Creoles, giving them a mobility in all their operations which cannot be attained by any other means. Provided with a herd of mares, which on such occasions form their only food, they can advance or retreat with great celerity, and thereby evade a rencontre with their opponents. The late Colonel Rauch, however, followed their example, when in command of the frontier, by feeding his soldiers on mares' flesh while on service, and thereby gained the desired superiority which discipline afforded, over his uncivilized opponents.

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The number of mules reared in this province is inconsiderable compared with that in the interior provinces, where the ground is harder, and better suited for the rearing of mules for exportation to Bolivia, and for the use of the mountainous districts. Sheep were formerly valued only for their wool, and were purchased for about threepence each; their flesh was seldom used for food, but was frequently dried and used as fuel in the burning of bricks; and there is still a law extant, prohibiting the practice of driving the sheep alive into the brick-kilns to save the trouble of previously killing them. They are now more valuable, both as an article of food, and for their wool and skins, which are exported. Endeavours have already been made to improve the quality of the wool by the introduction of Merino sheep. The price of sheep varies from half a dollar to a dollar each.

As the breeding of cattle has principally occupied the attention of the inhabitants of this country, comparatively little attention has hitherto been paid to the other branches of agriculture. Wheat is only cultivated to a small extent, and in quantity quite insufficient to supply the demands of the inhabitants. This is owing principally to the frequent failure of wheaten crops, which in dull and moist weather are liable to blight, and during other years to total loss from the long continuance of dry weather. In future this branch of agriculture will probably be principally confined to the country south of the river Salado, where the soil and climate are much better adapted to the production of wheat than nearer Buenos Ayres. In the former district the soil consists of a stratum of black mould, several feet in thickness, under which is a bed of clay, resting on sand and gravel, where water is usually found. In the latter it consists of a chalky yet productive mould, unmixed with stones, but resting on a stratum of *tosca*, consisting of hardened clay and lime, which is usually situated from ten to thirty yards beneath the surface. Barley and maize are cultivated with success; the latter being produced in great abundance, and extensively used as an article of food. The great influx of intelligent foreigners into the province has introduced many branches of agriculture previously unknown, and materially contributed towards developing the natural resources of the country. The introduction of timber and forest trees into the province as an article of culture has excited much attention; and efforts are making to form plantations, which will greatly beautify the country, and eventually supply the inhabitants with timber, which at present is brought from a great distance, and is very expensive.

The fences or inclosures used in this country consist, in the neighbourhood of the city and the more cultivated districts, of the *tuna* (*Cactus Peruvianus*) and American aloe (*Agave Americana*), which grow with rapidity and luxuriance, especially the latter, whose tall, flowering stem rises up to the height of twenty-five or thirty feet in the course of one year, and strikingly evinces the strength of vegetation in this climate. It is considered objectionable as a fence, as its large sheathing leaves afford shelter to numerous small animals, which destroy the produce of the fields inclosed. In the more remote districts ditching has been found to be the only kind of inclosure suited to the country, the earth which is excavated forming a raised embankment on the inside. Some of the foreigners settled in the country have improved this mode of fencing, by planting rows of the *tala* shrub along these embankments.

Immigra-
tion.

In consequence of the long and extensive intercourse which has been maintained between the inhabitants of Buenos Ayres and the numerous foreigners established in their country, they have been deeply impressed with the importance of an increase in their numbers, having had

ample experience of their greater industry and superior attainments in agriculture and the arts. The authorities, fully participating in these feelings, took effectual measures to encourage, by every means in their power, the ingress into the country of industrious artisans and agricultural labourers from Europe. Accordingly, on the 13th April 1824, and 19th January 1825, decrees were issued by the government, appointing a committee of emigration, who were provided with the necessary funds and instructions to enable them to carry forward this important undertaking. This committee consisted of citizens, and foreigners resident and possessing fixed property in the country, so proportioned as duly to represent the interests of all parties concerned. They were directed to take effectual measures to make known to the industrious classes in Europe the inducements held out to them to emigrate to Buenos Ayres, and to employ agents in Europe in furtherance of the undertaking. They were authorized to pay a sum not exceeding one hundred dollars, or twenty pounds sterling, as passage-money for each adult arriving in the country; to provide such as required assistance on their arrival, with food and lodgings for fifteen days, during which time they were allowed to seek for employment, and, if unsuccessful at the expiry of that period, the committee were charged with the duty of finding employment for them, and of regulating the contracts and agreements entered into by mutual consent with their employers, in such a manner as to secure the rights and privileges of each party during its continuance, and to provide for the repayment of the expenses incurred by the committee, by means of a well-regulated system of gradual instalments. It was likewise enacted, that emigrants completing the terms of their respective engagements to the satisfaction of the committee, were entitled to a preference in the renting of the state lands, each portion of land not being of less extent than sixty acres, but greater in proportion to the fitness and means of each. Under such circumstances, deserving individuals were authorized to receive from the funds of the committee a loan of three hundred dollars, or sixty pounds sterling, on which a per centage was to be paid annually, and the whole repaid by instalments at stated but convenient periods; all such occupiers of land having the right of possession of the legal value of the lands, of all the improvements effected, and to negotiate or transfer them, as also to become the purchasers of such lands in preference to every other competitor, when authorized by law to be sold. The emigrants were to enjoy the protection and guarantee of the laws of the country, the security of persons and property, and the enjoyment of all rights and privileges possessed by the natives; exemption from all taxes and contributions not imposed on the rest of the community; and exemption during a certain period from all civil and military services, unless voluntary, together with the free exercise of their religion.

These judicious regulations were speedily carried into effect by the committee, in the preparation of the Recoleta, a large and spacious convent in the vicinity of the city, for the reception of emigrants and their families on their arrival, and by the active circulation, in Great Britain, France, and Germany, of these regulations. The efficacy of these measures was soon afterwards evinced by the numbers who resorted from these countries to Buenos Ayres. The following table will show the progress made in this undertaking during the interval between the time of its enactment and November 1826, when all further arrivals of emigrants were prevented by the war with Brazil. It shows the amount of monies advanced to the emigrants by the committee, and the extent of the repayments which had been made, up to April 1828; and the results are highly

creditable to the national character of the Germans, who, on account of their industry and correct conduct, are much esteemed in this country. The village of Chorroarin, al-

luded to in the table, was an establishment formed for the German emigrants on 11th March 1827, in the neighbourhood of Buenos Ayres.

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Abstract of Proceedings of Committee of Emigration of Buenos Ayres, from 24th September 1825 to April 1828.

Emigrants.	Men.	Women.	Children.	Total.	Money advanced in Dollars.	Money repaid in Dollars.
French, in nine vessels.....	617	78	62	757	67,143 0	19,034 5
Germans, in two do.....	107	65	71	243	31,333 7½	31,333 7½
English, in two do.....	91	...	...	91	9,205 2	5,170 4
French, } in various vessels...	56	8	7	71	4,270 7	421 4
Germans and others, }	9	...	...	9	1,630 0	1,594 6½
German colony at Chorroarin	...	...	...	...	18,956 6	18,806 4
Expenses of establishment at Recoleta...	...	...	...	...	9,529 3½	1,109 3
Contingent expenses	...	...	...	...		
Total	880	151	140	1171	142,068 2	77,471 2

Amount of money advanced.....L.28,413 13 0 sterling
Do. repaid..... 15,494 5 0

Remaining due April 1828.....L.12,919 8 0

The subsequent proceedings of the committee are of little interest, the continuance of the war, and the other political circumstances of the country, having prevented any renewal of their exertions. On the 20th of August 1830, the committee was abolished, and their proceedings brought to a conclusion, by a decree of that period, the existing authorities disapproving of those political principles which originally gave rise to its formation. They affirm that experience has proved to their satisfaction, that the method hitherto pursued with the agricultural emigrants in this country has not been productive of that advantage to the country or to the emigrants themselves which was at first anticipated. It has therefore been determined that any subsequent endeavours to encourage emigration by the government shall be conducted on different principles from those formerly pursued.

The efforts to promote emigration to this country were not, however, entirely confined to the government of Buenos Ayres, but were participated in by two emigration associations connected with Great Britain. The one formed in London under the direction of Mr Barber Beaumont, and named the Rio de la Plata Agricultural Association, sent out emigrants on various occasions to the number of more than six hundred persons, and incurred considerable expense; but it completely failed in accomplishing the principal objects of its institution, the formation of an extensive agricultural establishment in the country. This failure has been attributed by some of those engaged in the undertaking, but evidently on insufficient grounds, to the bad faith, apathy, and want of co-operation on the part of the authorities of Buenos Ayres; and it may with much greater justice be ascribed to the precipitation and mismanagement of those intrusted with the affairs of the association. The emigrants, injudiciously selected, were hurried from Great Britain before they had provided efficient or responsible agents in the country, or had made the necessary arrangements for their reception; the consequence was, that the greater number were kept in a state of idleness and inactivity at Buenos Ayres for many months after their arrival, during which time they became acquainted with the country and its inhabitants, and formed connections tending to divert them from fulfilling their engagements to the association, so that only a few of them ever reached their final destination. The greater part of their operations were carried on during the war with Brazil, when every obstacle was thrown in the way of their

success; and the principal agricultural establishment which they formed was in the province of Entre Rios, where the authorities of Buenos Ayres exercised no influence or control, more especially during the war. The Committee of Emigration advanced, in aid of these emigrants, 26,802 dollars, or L.5025. 7s. 3d. sterling, no part of which appears ever to have been repaid. But although this undertaking proved a complete failure in as far as the interests of the shareholders were concerned, yet the emigrants had no cause of complaint, since all those inclined to be industrious found plenty of employment and good wages. Some of them entered on board the privateers and into the naval service of Buenos Ayres during the war with Brazil, and greatly distinguished themselves during their various combats with the Brazilian squadron.

The other association was of a very different character. It was formed by the Messrs Robertsons, British merchants settled in Buenos Ayres, and in connection with some of the natives possessing influence and capital. They purchased some adjoining properties at Monte Grande, situated about fifteen miles south-west of the city. The emigrants were selected with great care from among the intelligent and experienced farmers of the south of Scotland, and were conveyed to the new colony with their families, domestic and farm servants, and all the requisite implements of husbandry. The property, which contained upwards of fifteen thousand acres, was divided into nearly equal portions, and distributed among the principal farmers by lot, a part having been reserved for the formation of a projected village, and for some other purposes connected with the establishment; and a comfortable brick house and offices were built at each farm for the accommodation of the emigrants.

In April 1828, when the colony had been in existence three years, and had the fairest prospect of ultimate success, it presented a very interesting appearance. It had already attracted the attention of the most intelligent citizens of Buenos Ayres, and of the inhabitants around it. The farmers had made considerable progress in bringing under culture the lands which had been apportioned to them, and which they found almost in a state of nature. While introducing the Scottish system of farming, they judiciously adopted those agricultural practices of the country which were found best suited to the soil and climate, and with the most decided advantage. Two thousand and fourteen acres had then been inclosed with well-made ditches, and planted with young hedges formed of *tala*, a thorny shrub, natural to the country, which, on trial, had been found well calculated for this purpose. Four hundred and thirty-nine acres had been planted with forest and fruit trees, in addition

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to the *tala* thicket, which they found in existence; and they had abundant crops of maize or Indian corn, but had failed in their attempts to cultivate wheat. The dairy had proved a very lucrative branch of industry, the colonists having in their possession two thousand seven hundred and fifty-seven head of black cattle, principally milch cows. They made considerable quantities of butter and cheese, which, on account of its excellent quality, was quickly sold in the city at high prices.

Some of the original emigrants had left the colony, but had been replaced by others of the party of Beaumont; and the colony then consisted of one hundred and fifty-three men, eighty-eight women, and eighty-seven children, in all three hundred and twenty-six Scotch; and a hundred and eighty-eight natives of the country were employed in their various domestic and agricultural occupations, with which they had become familiarized. A Presbyterian chapel had been erected, and a clergyman brought from Scotland, who, besides his clerical duties, superintended the education of the children of the colony. The improvements which they had introduced into the agricultural practices of the country were numerous and important; but it may suffice to state one or two instances to evince the advantages arising from their zeal and intelligence. During the first year of their settlement one of their number lost some of his crop, in consequence of the dried thistles in the neighbourhood taking fire and extending its ravages to his fields. The conflagration, however, was speedily extinguished, and prevented from extending itself farther, by the strenuous and united efforts of all the colonists. But to prevent a similar occurrence in future, and to clear their lands from such intruders, one of their number invented an instrument which with little expense and trouble speedily accomplished this object. The wheels, axle-tree, and trams of a cart were procured; two perpendicular shafts were made to project downwards from the axle-tree, having the lower extremity armed with scythes; a rotatory motion was communicated to these scythes by the movement of the wheels of the cart, and they cut across all the young thistles which intervened between the wheels in passing. It was moved by a single horse. When this was done at the proper season, the thistles did not arrive at maturity or bear seed that year, and were thus gradually extinguished. The *biscachos* committed great ravages among their corn and green crops, and were therefore rooted out of the colony by the following means. By the common consent of the colonists, the whole of their burrows, which are generally found crowded together in certain localities, were firmly closed up with earth; and the same operation was repeated daily for some time, where new holes were formed, until these animals were either driven from the district, or perished in their burrows from excessive labour and deficient food; for they are timid, and only venture out to feed during the night time.

Since the above period, however, the Scottish colony at Monte Grande has experienced various vicissitudes tending to retard its progress. During the civil war which prevailed in the province in 1829, the whole of their live stock was swept away by the combatants; but the colonists having assiduously cultivated their fields when their neighbours had suspended their agricultural operations in consequence of the disturbed state of the country, they sold their produce at high prices, the people being almost entirely dependent on them for some articles, and thereby more than counterbalanced the losses they had otherwise sustained. Subsequently they have experienced, in common with all the rest of the province, the fatal consequences of the long-continued drought which has almost ever since prevailed, and against which no foresight or industry could provide. From these and other causes the original establishment has

been broken up; and the farms are now held on a different tenure by several of the original farmers, who have, in some instances, been joined by their friends and relatives from Scotland.

Artizans in considerable numbers have likewise resorted from Europe to this province, and, when industrious, they have almost uniformly improved their circumstances. They have plenty of employment, and, as well as the agricultural labourers, receive high wages. These inducements, the abundance and cheapness of living, and the protection of person, property, and religion, which is enjoyed at Buenos Ayres, only require to be better and more generally known in Europe to induce a considerable portion of its redundant population to remove to a country possessing so fine a climate, with such great natural and social advantages.

Emigrants from Great Britain have even greater inducements than others to settle in this country, as, besides the security and privileges insured to all foreigners settling among them by the established laws of the country, they are especially protected by a treaty of amity, commerce, and navigation, concluded on the 2d February 1825, between his Britannic majesty and the supreme authorities of the united provinces of the Rio de la Plata. This treaty guarantees a reciprocal freedom of commerce and navigation; security of person and property, even in the event of a rupture between the two countries; the right of possessing and disposing of property of all kinds by will or otherwise; exemption from all compulsory military services by sea or land, and from all forced loans or military exactions; the enjoyment of perfect liberty of conscience, with the free exercise of religion; and the right of building churches or chapels, with the previous consent of the government, and of forming burial-places for their own use. British capital to a considerable amount has already been invested in the purchase of property in this country, and in the formation of *estancias* and other establishments; and emigrants from Great Britain are received with the best and most friendly feelings on the part of the inhabitants, the more intelligent part of whom are strongly impressed with the conviction, that the future prosperity of their country will mainly depend on the augmented number of industrious emigrants from Europe.

Such emigrants as possess capital, and resort to Buenos Ayres for the purpose of engaging in the breeding of cattle or in agriculture, will find valuable properties which may be purchased at moderate prices. The value, however, varies considerably according to situation and other circumstances. The sale of public lands has been prohibited for some years past, in consequence of the extensive alienation of state lands which formerly took place, at a time when the price obtained was very inconsiderable, and altogether inadequate to their real value. The law of *emphyteusis* was therefore passed, which prohibits the further sale of public lands until the country shall be relieved from the debts and other obligations contracted by the government, and its revenue otherwise well regulated; it being anticipated that, as the government becomes more permanent and efficient, and the population more numerous and industrious, the increased value of these lands will not only suffice to relieve the country of these encumbrances, but will furnish a permanent revenue, so as to enable the government to lessen the custom-house duties and other taxes. This law has been considered as favourable to emigrants and natives desirous of forming *estancias* or farms, by its preventing the accumulation of large tracts of land in the hands of capitalists, who might exercise an undue or capricious influence over such settlers, or retain their lands in an unproductive state; and by enabling settlers at once to employ all their capital in the improvement of the property

they occupy, instead of sinking a large portion of it in the purchase of land.

These regulations enable the authorities to dispose of the public lands on leases of not less than eight years, at an annual quitrent, estimated at about eighty dollars, or L.16 sterling, for every square league of land; the precise sum, however, is fixed by a jury of the neighbouring proprietors, on a survey and measurement being made at the public expense, under the direction of the topographical board; it being necessary in granting leases, or in the transfer of property, to have their limits determined by such means, to render these transactions legal. To the leases of public lands are annexed the following conditions, namely, that all improvements made on the lands during the lease shall belong to the lessee, be transferable to his heirs or successors, and paid for according to valuation, by government, or by his successor, in the event of his leaving the land at the end of the lease; and that, in the event of the property being sold by the government, the lessee shall have a preferable right to become the purchaser over every other person. To render such leases valid, if for an *estancia*, the tenant is required within two years to have on the property at least a hundred head of cattle, the requisite number of horses, a hut or dwelling-house, and a corral or inclosure for the cattle, for every square league of land so occupied. At the termination of the lease, if desirous of continuing in possession, a renewal of the lease may be obtained on an increase of rent proportioned to the augmented value of land, as determined by a jury.

The promulgation of this law was followed by many applications for lands, and numerous *estancias* have accordingly been formed. Endeavours have been made by influential individuals possessing capital, and desirous of obtaining entire possession of some of these lands, to have this law rescinded, but hitherto without success, or any probability of such a change; as the general impression among the influential inhabitants of Buenos Ayres is favourable to the permanency of a measure so much calculated to maintain the credit and respectability of the country and of government.

From its advantageous position, Buenos Ayres seems destined to become the great emporium of commerce in this part of South America, being situated near the confluence of the rivers Parana and Uruguay, where they unite to form the Rio de la Plata. An easy communication is thereby afforded with those extensive and important countries through which these mighty rivers and their numerous tributaries flow. The Parana, which is considered the parent stream, may be navigated without impediment as far as the island of Apipe, distant fifteen hundred miles from the mouth of the river Plata, at Cape Santa Maria. The river Paraguay, of equal importance, may be ascended nearly as far as the Laguna de los Xarayes, and conveys vessels of considerable size to Assumption, the capital of Paraguay, in which country vessels of three hundred tons have been built, and afterwards employed in foreign voyages. The large and important rivers Pilcomayo and Vermejo flow into the Paraguay, and extend the communication by water within a short distance of the centre of Bolivia, traversing in their course the provinces of Salta and Gran Chaco. Farther south the fertile provinces of Tucuman and Sant Iago del Estero communicate with the Parana by means of the Salado, which unites with it at Santa Fè; and the river Tercero may be rendered available, at an inconsiderable expense, in improving the communication with the provinces of Cordova and of Cuyo, situated near the Andes.

The Uruguay, in connection with the Rio Negro, and other important rivers which unite with it, penetrate far into the interior, and open up an extensive and fertile

country to commerce and civilization. Little advantage, however, has hitherto been taken of all these facilities, either by the Spaniards or their successors; and the commerce which is carried on by means of these rivers is as yet very limited. The establishment of steam navigation will powerfully contribute to the extension of industry and civilization throughout these countries, by the certainty and rapidity of communication which will be the consequence. By this means a voyage may be made from Buenos Ayres to Assumption in a fortnight, though under present circumstances it occupies several months.

The commercial intercourse of Buenos Ayres with the interior has hitherto been principally carried on by means of mules, and of waggons drawn by six bullocks each. These waggons are of a rude and clumsy construction, being formed entirely of wood, and are secured and strengthened by pieces of hide. They usually travel in troops of from twelve to twenty in number, for mutual protection and assistance in cases of difficulty. Those which travel from Mendoza or San Juan to the capital, a distance of about nine hundred miles, generally occupy a month in the journey. By means of these waggons a very extensive traffic was formerly carried on from Buenos Ayres for the supply of Upper Peru with European productions, and yerba or Paraguay tea, of which about 2,500,000 pounds were formerly sent every year to Peru, and 1,000,000 pounds to Chili. They travelled by way of Cordova, Tucuman, and Salta, to Jujuy, which is situated on the confines of Bolivia, and distant 1617 miles from Buenos Ayres. But the war of independence greatly interrupted this traffic; and subsequent events having enabled Bolivia to obtain supplies by a cheaper and more direct route, it has nearly ceased, excepting for the consumption of the intervening provinces, the greater part of which will eventually obtain supplies, and an outlet for their productions, at much less expense, by means of the rivers Vermejo and Salado, which traverse these provinces.

The commerce of Buenos Ayres, although subject to many and injurious restrictions under the Spanish regime, was very considerable, as Peru obtained many of its supplies by this channel. The average annual trade of this port between 1792 and 1796 was as follows:

	Imports.	Exports.
Spain	L.535,587	L.982,049
Havannah.....	20,397	15,059
Lima.....	5,264	4,723
Coast of Africa.....	66,705	27,987
	L.627,953	L.1,029,818

The extent and value of the foreign commerce of Buenos Ayres have since become very considerable, having gradually increased in importance since free intercourse has been permitted with other countries. The external wars and civil dissensions in which its inhabitants have been engaged have somewhat retarded its progress, but to a less extent than might have been expected. When its commerce is viewed in relation to the population and resources of the country, its amount far exceeds that of the other New South American states, and shows the great advantages it has derived from a free and unrestricted intercourse with other nations, and the liberal and enlightened principles pursued by the authorities in regulating this intercourse, and encouraging industry and enterprise.

In 1821 the number of vessels cleared out at Buenos Ayres were 322, of which 114 were British; in 1822 there were 304, of which 167 were British; in 1830 there were 250, of which sixty were British, seventy-one North American, forty-one national, twenty-six Brazilian, and the remainder of various nations. During 1821 and the

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three following years, the number of vessels which arrived at Buenos Ayres laden with goods and produce from Great Britain were a hundred and twenty-eight, a hundred and thirty-three, a hundred and thirteen, and a hundred and ten; but during 1831 only forty-four British vessels with cargoes arrived at Buenos Ayres, owing to the depressed state of commerce. The trade of Buenos Ayres with Paraguay has been almost entirely suspended during the last twelve years, in consequence of the extraordinary policy pursued by Francia, the ruler of that country; but it will undoubtedly be renewed on a change taking place, as its productions are important and in great demand all over South America, especially the yerba or Paraguay tea, obtained from the *Ilex Paraguayensis*; and the tobacco, which is of superior quality. Valuable timber is also obtained from the same country, with which an extensive commerce was formerly carried on.

With the exception of Brazil, the commerce of Buenos Ayres is of more importance to Great Britain than that of any other of the new states of South America. The whole exports from Britain to South America and Mexico, exclusive of Brazil, during four years ending 1825, amounted to L.12,986,139 sterling; and of this upwards of one third, or L.4,648,451, was sent to the Rio de la Plata. The value of the trade of Great Britain with this country is shown by the following table of exports and imports to Buenos Ayres in each year from 1806, when it was first opened to foreign commerce, to 1830, with the exception of 1808, 1809, 1810, 1811, and 1813, the records of which years were destroyed by fire. The diminution during 1826, 1827, and 1828, was owing to the war carried on between Buenos Ayres and Brazil, during which period the port of Buenos Ayres was strictly blockaded by the naval forces of the latter power.

Years.	Official value of Imports into Great Britain.	Official Value of Exports from Great Britain.			Declared value of British and Irish Produce and Manufactures exported from Great Britain.
		British and Irish Produce and Manufactures.	Foreign and Colonial Merchandise.	Total Exports.	
	£	£	£	£	£
1806	121,686	922,018	103,532	1,025,550	Records destroyed by fire.
1807	113,626	177,374	31,677	209,051	
1812	101,795	369,346	35,617	404,963	
1814	167,414	441,587	18,462	460,049	
1815	283,119	421,418	7,887	429,305	
1816	314,322	326,743	11,674	338,417	
1817	113,942	652,642	12,981	665,623	
1818	272,502	673,920	16,385	690,305	
1819	244,863	360,311	10,842	371,153	
1820	192,668	717,323	13,438	730,761	
1821	273,093	633,888	37,228	671,116	591,031
1822	373,844	1,232,250	34,082	1,266,332	981,047
1823	388,338	777,679	25,559	803,238	664,436
1824	498,646	1,550,393	31,382	1,581,775	1,141,920
1825	477,875	968,315	28,792	997,107	149,920
1826	265,630	415,582	6,318	421,900	371,117
1827	29,523	222,590	8,249	230,839	154,895
1828	143,491	477,115	7,249	484,364	312,389
1829	536,051	1,289,056	17,338	1,306,394	758,540
1830	583,946	1,067,884	12,680	1,080,564	632,172

The commerce of the United States of North America for one year ending 30th September 1826, with Buenos Ayres, amounted to 522,769 dollars, or L.104,553. 12s. of imports, and 379,340 dollars, or L.75,868, of exports, of which 222,832 dollars consisted of domestic produce, and 155,508 dollars of foreign produce. This trade has, however, greatly

extended itself of late years, in consequence of the fatal effects of the civil dissensions and other domestic calamities upon the crops. To supply the necessary wants of the inhabitants, large quantities of flour have been imported from North America, which has greatly tended to impoverish the country. The trade with the United States for flour will no doubt be greatly diminished, or cease altogether, if the republic remains tranquil, and is enabled to attend to agricultural pursuits. In former times considerable quantities of wheat were exported from Buenos Ayres to Brazil.

The imports into Buenos Ayres consist of manufactured goods from Europe, Asia, and North America; wines and brandies from France, Spain, and Sicily; Rhenish wines from Hamburg; gin from Hamburg, Antwerp, and North America; rum from Brazil and Havannah; ale, porter, salt, coals, iron, flag-stones, and other merchandise, from Great Britain; sugar, rum, and arrack, from the Isle of France, in exchange for mules; rum, rice, and tobacco, from the Havannah, in exchange for jerked beef; flour, pine-boards, planks, and mahogany, from the United States of North America. The following table shows the nature and value of these imports during 1829 and 1830.

	Dollars.
Cotton manufactured goods.....	11,203,305
Woolen do. do.....	3,134,294
Linen do. do.....	2,239,795
Silk do. do.....	283,551
Female dresses, ornaments, &c.....	1,823,640
Wearing apparel, hats, boots, shoes, &c.....	2,233,684
Jewellery.....	128,100
Furniture, carriages, and harness.....	448,709
Machinery and instruments of arts and science	41,922
Books, paper, engravings, music, &c.....	335,979
Hardware, cutlery, &c.....	1,139,911
Wines, brandies, ales, cider, &c.....	3,904,088
Tea, sugar, coffee, and other groceries.....	3,150,773
Yerba mate.....	681,100
Flour.....	2,256,901
Salt.....	907,190
Tobacco.....	631,395
Medicines.....	63,308
Perfumery.....	46,524
Naval and military stores.....	704,545
Glass, porcelain, stone-ware, &c.....	608,972
Marble, bricks, stone, lime, and stucco.....	81,712
Coals and fire-wood.....	42,547
Spermaceti and tallow candles.....	23,736
Wax, soap, oils, colours, &c.....	158,551
Timber of all kinds.....	232,029
Leather and furs.....	132,845
Sundry other articles.....	137,495

Total value in current dollars.....36,826,601

Imports in 1829, 36,836,601 dollars at	
10d. =.....	L.1,534,858 7 6
Do. in 1830, 42,433,270 do. at	
6½d. =.....	1,165,310 14 7

Total imports of 1829 and 1830...L.2,700,169 2 1	
Exports in 1829, 25,561,940 dollars at	
10d. =.....	L.1,065,048 10 0
Do. in 1830, 28,696,358 do. at	
6½d. =.....	807,085 1 0

Total exports of 1829 and 1830...L.1,872,133 11 0

The nature and value of the various articles of export from Buenos Ayres during one year, will be seen in the following table :—

[illegible]

Buenos
Ayres.
Tariff.

The regulations of the custom-house at Buenos Ayres are very good, and business is transacted there with so much dispatch and precision as to prove very satisfactory to merchants and travellers. The import, export, and transit duties payable at the port of Buenos Ayres are as follow, but liable to yearly revision and alteration.

Import Duties.—Mercury, machinery, and instruments used in agriculture, the sciences, and the arts; books, engravings, pictures, statuary, printing presses; wool and furs for manufactures; embroidery in silk, gold or silver, with or without jewels; watches, jewellery, coal, saltpetre, gypsum, lime, stone for building, bricks, timber, rushes, and canes, pay five per cent. Raw and manufactured silk, arms, powder, flints, pitch, tar, cordage, and rice, pay ten per cent. Manufactured goods and hardware pay seventeen per cent. Sugar, tea, coffee, yerba mate, cocoa, and provisions, generally pay twenty-four per cent. Furniture, looking-glasses, coaches, saddlery and harness, wearing apparel, boots, shoes, liquors, brandies, wines, vinegars, malt liquors, cider, and tobacco, pay forty per cent. All other articles pay seventeen per cent. Wheat, when not exceeding six dollars per fanega, pays four dollars; when seven dollars, it pays three dollars; and above seven dollars, it pays two dollars of duty. Flour pays three dollars per quintal; salt pays one and a half dollar per fanega; and hats of silk, wool, or fur, nine dollars each. **Export Duties.**—Hides of bulls, oxen, cows, horses, and mules, pay one dollar each. Salt beef exported in national vessels, grain, provisions, biscuit, flour, sheep skins, wool, tanned hides, and all manufactures of the country free of duty. Gold and silver pay one per cent., but the export of coined money is at present prohibited. All other productions of the province or interior provinces pay four per cent. **Transit Duties.**—Goods of maritime introduction, on being transhipped, pay a fifth part of the amount of duty payable on their introduction into the country. Goods warehoused pay two per cent. on being re-embarked. Twenty-five days are allowed for transshipping, and six months for re-embarking goods which have been warehoused, each being dated from the day of the vessel's arrival.

Bank.

A bank of discounts was established in Buenos Ayres in 1822, with a capital of one million of dollars, which continued to prosper while it remained a private concern, and under the management of those most interested in its prosperity. When the province of Buenos Ayres became engaged, almost single handed, in a contest with the empire of Brazil, the exigencies of the government induced the authorities to use their influence to have it converted into a national bank, of which the government became large shareholders, and acquired great influence in its management. Strenuous efforts were made to extend its operations to the other provinces, but the introduction of its paper currency was so firmly opposed in almost every quarter, that very little has ever gone beyond the province. The fatal consequences of this measure were soon apparent in the great and rapid depreciation of the bank paper; an evil which was increased by every successive issue of paper to supply the wants of the government during the war with Brazil, and during the civil dissensions which have subsequently occurred. From forty-five pence, at which the paper dollar stood before the formation of the national bank, it fell at one time as low as fivepence halfpenny, and, according to the latest accounts, was sevenpence halfpenny per dollar. The interference of the government with this institution, of which they became the principal debtors, has proved ruinous in the extreme to the wealth and prosperity of the inhabitants. An effort was made by the authorities to remedy this great evil, by the imposition of certain extra duties and taxes, from which sources a sinking fund was created to purchase up and extinguish the bank currency; and some progress has already been

made in this undertaking, but as yet little compared with the extent of the evil. The bank has thus become so intimately connected with the financial state of the country, that it can now only recover its former credit in proportion as the state is enabled to repay the debts which it has contracted in relation to this establishment.

The revenue derived by Spain from Buenos Ayres from 1776, when it was formed into a vice-royalty, until 1806, when it was taken by the English, seldom exceeded seven hundred thousand dollars annually; which sum not only comprised the revenue of the provinces of Rio de la Plata, but also that of Upper Peru. It was derived from the alcabala, a duty of from three to five per cent. on all sales and re-sales, tithes, royal fifths of gold and silver, a poll tax on the Indians, sales of papal bulls, tonnage duties, &c. Many of these imposts were very oppressive, and often exacted with great partiality and injustice. But they ceased to be productive on the commencement of the revolution, with the exception of the customs, which were greatly augmented, in consequence of the extensive trade which ensued. The revenue derived from the custom-house of Buenos Ayres for five years ending 1795 amounted to 1,947,849 dollars, giving an annual average of 389,569 dollars; during 1802 it had increased to 857,702 dollars. Various attempts were made by the new government to increase the amount of revenue from this source, by an augmentation of the duties, but with the most injurious consequences to the revenue, as the high duties created so extensive a system of contraband trade, in a country possessing so many facilities for the infraction of the revenue laws, that on some occasions whole cargoes were landed without the payment of any duties.

In 1821 effectual measures were taken to remedy this evil, by remodelling the custom-house, and establishing a new scale of duties, formed on such moderate and just principles as tended to remove the temptation to further violation of the revenue laws. By the new tariff, the duties imposed on imports were from five to twenty-five per cent.; all duties being abolished on goods transmitted to the interior or received from thence, hides excepted. The beneficial consequences resulting from these regulations were apparent, in the immediate termination of smuggling, and the great increase in the revenue from the custom-house. The stamps and licenses were properly regulated, and extended to public houses. The port duties were continued, but national vessels were exempted. A property tax was imposed on capital, merchants paying annually eight dollars, manufacturers six, breeders of cattle two, farmers one, and all others two dollars for every thousand dollars of property; every one having less than one thousand dollars of capital being exempted from this duty, and, if married, less than two thousand dollars. The alcabala was abolished, and next year the tithes shared the same fate. After the improvements made in 1821, however, the increase of the revenue from the customs and other sources was very remarkable. In 1822 and 1823, and subsequently, the amount of these, with sales and rents of public property, has been as follows.

Revenue of 1822 and 1823.

	Dollars.
Customs.....	3,616,349
Stamps.....	189,208
Port duties.....	80,012
Property-tax.....	60,669
Tithes (abolished in 1822).....	50,682
Sundry minor duties.....	277,548
Sales of public property.....	148,934
Rents and revenue of do.....	158,192

L.916,318. 16s. sterling =..... 4,581,594

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Revenue of 1824.

	Dollars.
Duties and taxes.....	2,350,216
Sales of property.....	78,582
Rents and revenue of do.....	159,994
L.517,758. 8s. sterling = ...	2,588,792

Revenue of 1825.

L.526,629. 3s. sterling = ...2,633,148

Revenue of 1830, and to 30th June 1831,—18 months.

Customs.....	12,008,796
Stamps.....	668,864
Port duties.....	177,700
Property-tax	459,650
New duties for extinction of bank notes.....	1,810,629
Minor duties	121,463
Sales of property.....	56,011
Rents, dividends, &c.....	962,973
L.453,212. 16s. 8d. sterling = ...	16,266,086 Ex. 6 $\frac{3}{4}$ d.

During the early years of the revolution, the revenue having proved insufficient to meet the expenses of the war of independence, various loans were at different times obtained, and these were allowed to accumulate until 1821, when they were examined and found to amount to about four and a half millions of dollars. This debt was then consolidated, and a sinking fund created for its gradual extinction, which has been in operation ever since. But in the interim a variety of causes gave rise to the accumulation of new debts. During 1824 a loan was contracted in London for one million sterling at six per cent., the contracting price being eighty-five per cent. The value of these bonds fluctuated considerably during the continuance of the Rivadavian administration, the interest having been regularly paid in London when due; but only on one occasion did they fall so low as forty. Since 12th July 1827, however, no interest whatever has been paid, consequently these bonds have fallen in value, having varied from forty to twenty, their present value being about twenty-four per cent. Besides this loan, various other additions have been made to the public debt during the war with Brazil, of which the following statement presents an approximate view.

Funded Debt.

	Dollars.	Dollars.
Funded previous to 1826, at 4 per cent.....	2,000,000	
Since redeemed by sinking fund	472,899	
		1,527,101
Ditto ditto at six per cent.....	5,360,000	
Since redeemed by sinking fund	2,495,981	
		2,864,019
Funded in 1827, at six per cent.....	6,000,000	
In circulation of the creation of 1831, at six per cent....	1,500,000	
Total amount of local funded debt.....		11,891,120

Floating Debt.

Balance due the National Bank	16,749,289
Less the amount of shares held in the bank by government	3,084,000
	13,665,289
Total local debt.....	25,556,409

As these items were contracted at different periods, when the exchange varied considerably, the value in sterling money of the loan, and of the funded and floating debt when contracted, may be estimated as follows:—

Loan on England	L.1,000,000
Local funded debt.....	822,984
Ditto floating debt	1,708,161
	L.3,531,145

To this amount should be added the interest due on the loan contracted in England at six per cent. during the last five years; and also a loan of four millions of current dollars, amounting, at 7 $\frac{1}{2}$ d. each, to L.125,000 sterling, which has been raised by subscription in the province during the early part of 1832, to enable the government to pay the expenses incurred by the late civil war. These sums being united to the others, will raise the total amount of the public debt to about four millions sterling.

With the exception of the loan contracted in London, the whole of the remaining debt is redeemable in the currency of the country, and, in consequence of its great depreciation, could easily be paid off at the present time. But as this can only be accomplished gradually, the rates of exchange will necessarily rise in proportion to the progress made in the payment of the floating debt, and on the general prosperity of the country. The two sinking funds are still in operation for the extinction of the public debts; the one to redeem the funded debt, the other formed from the new duties imposed for the express purpose of buying up and destroying the bank-notes in circulation, or floating debt, and thereby removing the principal cause of the present depreciation. From 16th November 1829, when this latter sinking fund was first established, to 15th January 1832, it has produced 2,481,323 current dollars, or L.76,291. 6s. 11d. sterling, which has been already applied to the extinction of the paper currency. The revenue, in times of peace, considerably exceeds the necessary public expenditure; and, if tranquillity can be maintained for some years, it will materially contribute to the ultimate payment of the public debt. Besides, the public lands are preserved inviolate as a guarantee to the public creditors; an example which ought undoubtedly to be followed with the public lands of the other provinces, as they have had an equal share in the good or bad consequences resulting from the war of independence, the war with Brazil, and the civil contentions which have occasionally prevailed in the country, and given rise to the accumulation of these debts, the province of Buenos Ayres having on all these occasions principally contributed the necessary funds. That effectual measures will be adopted to accomplish this very desirable object as soon as circumstances will permit, cannot be doubted, as the authorities and the community are in general strongly impressed with the importance of regaining their credit, both at home and abroad; and it is but doing justice to the national character for good faith in pecuniary matters, to state, that prior to the Brazilian war, and the depreciation of the currency, it was a rare occurrence for any native of the Argentine Provinces engaged in business to become bankrupt, or to fail in the due performance of his pecuniary engagements.

In 1806, when the city of Buenos Ayres was taken by the British, its population was estimated at sixty thousand. In 1823 a calculation of the population was made from the bills of mortality of the city and country; the proportion of $\frac{1}{52}$ being assumed as the measure of mortality in the former, and $\frac{1}{40}$ in the latter, which gave 81,136 for the city and 82,080 for the country. In 1822 and 1823 the proportion of deaths to births was as 100 to 111 in the city, and 100 to 156 in the country, the average of the whole province being 100 to 131. The assertion that a larger proportion of females than of males is born in this country has been disproved by the same returns, which show the births of males to that of females to be 100 to 95 in the city, and 100 to 96 in the country. The proportion of deaths under fifteen years of age to that of deaths above this age was 100 to 95 in the city, and 100 to 98 in the country. The following table of marriages, births, and deaths in the city and province of Buenos Ayres during the first six months of 1822, indicates the relative propor-

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Ayres.

tions of the white and coloured population, and what proportion of the latter were then slaves. Their number has

since been considerably diminished, in consequence of the operation of the existing laws for the extinction of slavery.

	MARRIAGES.			BIRTHS.				DEATHS.		
	White.	Coloured.		White.		Coloured.		White.	Coloured.	
		Free.	Not Free.	Male.	Female.	Male.	Female.		Free.	Not Free.
City.....	165	50	69	453	413	168	179	547	196	61
Province.....	289	40	14	615	604	100	97	634	149	16
	454	90	83	1068	1017	268	276	1181	345	77

Negro
slaves.

The number of negro slaves in the province of Buenos Ayres was never very great; they have seldom been employed in laborious works, but principally in the city as domestic servants, and have generally been treated with great kindness by their masters and mistresses. The laws which have regulated the relation of master and slave in the Spanish colonies have always been mild and favourable to the latter, and their condition has been improved by the revolution. There is a law in this republic which enables a slave, if dissatisfied with the treatment received from his owner, to insist on being sold, provided he can find a purchaser willing to pay the price given for him, or his full value as ascertained by competent judges; a regulation which exercises a most beneficial influence on the proprietor as well as on the slave. In 1813 it was decreed by the national congress, on the declaration of independence, that all children born of slave parents after that date should be free, consequently the number of slaves has been greatly diminished. During the early part of the revolution several thousands of the male negro slaves were purchased by the government from their owners, to serve as soldiers in the patriot armies, a practice which was discontinued in 1822. From all these causes, the number of negroes who are not yet free cannot now exceed one twelfth or one fifteenth part of the population. By the treaty concluded with Great Britain, all Argentines are prohibited from engaging in the slave trade. Little attention has hitherto been paid to the education or moral training of the free children of slaves; an evil which is now very apparent, and which ought to have been provided for on passing the law to which they owe their freedom.

Indians.

The aboriginal tribes of Indians who inhabit the southern part of this continent, east of the Cordillera of the Andes, are very inconsiderable in number, not exceeding 8000, including men, women, and children, according to the most authentic information; but even these have often proved formidable enemies, from their rapid movements and unexpected attacks on the Creoles, who, although more numerous, were often disunited, and without effective means of defence. Occasionally on these incursions they have been augmented by parties of the Araucanian Indians from the shores of the Pacific Ocean, who are closely allied to them in manners and character, use nearly the same language, and are distinguished by the same acuteness and intrepidity which have so long characterized that nation. It is truly satisfactory to find, that of late peace and tranquillity has been maintained with the Indians, and a good understanding established with them, in consequence of the conciliatory and pacific measures recently pursued by the authorities of Buenos Ayres in their intercourse with these tribes, who now resort in greater numbers and with more confidence than formerly, to the capital, where they carry on a traffic with the inhabitants, and behave with more order and decorum than previously. They have evinced some disposition to adopt the customs and habits of civilized life; and in one dis-

trict on the frontier the Indian population applied to the government for the erection of a Catholic chapel. Such occurrences as these indicate that the present period is favourable for the introduction of schools for the education of their children, and of those institutions which tend to the promotion of order and industry. Instances are not wanting of their aptitude for improvement, and of the great value they attach to the attainment of knowledge; but hitherto no effort has been made to improve their condition; and they have been taught little by the Creoles excepting their vices, a large proportion of those who have hitherto penetrated into their country having been worthless characters, or such as have fled from justice to avoid the punishment of their crimes. A systematic plan for introducing civilization among this people, if pursued with steadiness and good faith, could not fail of success, and in a few years would convert these tribes, from being the scourge and terror of the country, into quiet and industrious neighbours. The further extension of the Argentine republic towards the south would be greatly facilitated by these means, and very extensive and valuable tracts of country acquired by purchase at an expense far inferior to their real value; every circumstance calculated to produce a renewal of hostilities on the part of the Indians would be avoided; confidence and security would be restored; and a new impulse would be given to the industry and enterprise of the country. Hitherto it has been too much the practice to deprive the Indians of their lands by fraud or violence, when the same object might have been more effectually attained by milder means, had good faith and strict justice been observed towards them. The number of foreigners resident in the city and province of Buenos Ayres is estimated at 12,000, of whom one third are British, one third French, and the remainder Germans, Italians, &c.

Great improvements have taken place at Buenos Ayres in all the departments of education. In 1821 a university was founded there by a decree of the government, and an annual grant of ten thousand dollars given for its maintenance; salaries varying from four hundred to one thousand dollars per annum having been assigned to each of the professors. The principal departments of education then and subsequently instituted at this establishment have been Latin, French, and English, drawing, elementary and practical mathematics, logic, moral and natural philosophy, political economy, civil and national law, theory and practice of medicine and surgery, materia medica, chemistry, and natural history; and a commencement has been made in the formation of a national museum. Provision was also made for the education of those destined for the clerical profession. Degrees of law, medicine, and legislature, are conferred at this university. The government of Buenos Ayres made an offer to the provinces to educate at this university, at the public expense, six young men from each province; an offer which, with few exceptions, was gratefully accepted: but one province in parti-

Educational

Buenos Ayres. cular, Mendoza, not satisfied with this number, solicited permission to send twelve of the youth of that province; a request which was acceded to, much to the satisfaction and advantage of its inhabitants. Numbers of young men have also been sent from Buenos Ayres to different parts of Europe for the improvement of their education.

Commercial, military, and various other academies and public schools, on improved principles, have been established in the city for the education of the children of the more wealthy classes, and, among these, an infant school particularly merits attention. Upwards of eight schools on the Lancasterian system have been formed for the tuition of the boys of the lower classes, and are supported at the public expense. A school for the education of the children of foreigners has been established by the British residents, and supported by voluntary contributions and other charitable expedients. During 1830 seventy-two boys and seventeen girls were educated at this school.

In former times the education of females was entirely neglected in this country; but since the country became independent, great advances have been made in this branch of education, more especially in the course of the last nine years, during which time no department of public improvement has made more steady or efficient advances than that of female education. On the 12th of April 1823 an institution called the Society of Beneficence was established under the auspices of the government, and composed of about twenty of the most influential ladies of Buenos Ayres, to whose care was intrusted the direction and superintendence of female education throughout the city and the province. The system of tuition adopted by this society in their schools was that of mutual instruction, introduced by Lancaster, with various improvements recommended by Madame Quignon and others. Besides reading, writing, and arithmetic, they are taught sewing and embroidery in all its departments, and are likewise, in some schools, instructed in the domestic and other duties most suited to their respective stations. In 1825 the number of schools was seven, and these contained six hundred children. In 1827 there were eleven schools, seven in the city, with five hundred and eighty-eight scholars, and four in the province, at San Jose de Flores, San Pedro, Chascomus, and San Nicolas, with two hundred and seventy-one scholars; in all eight hundred and fifty-nine children. At the commencement of 1832 the number of schools under the care of the society, in the city and province, amounted to fourteen, new ones having been instituted at Luxan and San Fernando; and the number of females educated altogether amounted to one thousand two hundred and four. The experience acquired has enabled the society to reduce its expenditure to less than one half of the sum incurred in 1825, which was sixteen thousand one hundred and six dollars, and at the same time to double the number of schools and young females educated. A uniform system of education prevails in all these schools; and the mistresses or teachers employed, with the exception of four, have been trained and educated in the schools of the society.

There is annually a public examination of the scholars attending these schools, about the time of celebrating the festivals in commemoration of independence. On these occasions the needle-work and other productions of the girls are exhibited to the public, and prizes, provided at the expense of the government and the society, distributed to the most deserving. At each festival three other prizes, the one valued at two hundred, and the others at a hundred dollars each, provided by the government, are adjudged by the society to those females who have most distinguished themselves by good moral conduct, industry, and filial affection. These prizes have been distributed annually since the esta-

ishment of the society, and have had much influence in improving the moral and industrious habits of the community. The zeal and uniform constancy with which the ladies connected with this institution have discharged the duties intrusted to them reflect the highest credit on their patriotism and active benevolence, and have already conferred important and lasting benefits on their country.

In 1830 a commission was appointed by the government to investigate the actual state of education in all its various departments throughout the province. An able and judicious report was given in on the 16th March, pointing out numerous defects in the system pursued at the different establishments for education, and suggesting various improvements calculated to render them more efficient, and to place the different departments in greater harmony and accordance with each other, and under a more efficient and responsible superintendence, than heretofore. Primary instruction, consisting of reading, writing, arithmetic, grammar, and the elements of morals and religion, was to be general and obligatory on all the inhabitants. Scientific instruction, consisting of preparatory studies and philosophy, physical and mathematical sciences, medicine, jurisprudence, and theology, was to be optional but gratuitous to all the youth of the country. This report was approved of by the authorities, and is now in course of being carried into practice. These regulations do not apply to any other seminaries of education, excepting those supported at the public expense. No interference, however, has taken place in the department of female education, which still continues under the efficient superintendence of the Society of Beneficence.

In 1811 a public library was formed in Buenos Ayres Literature. by the late Dr Mariano Moreno, one of the most influential persons in effecting the revolution of 1810. At first it contained only 12,000 volumes; but in 1822 it had increased to about 20,000. It has been well selected and regulated, while every convenience and accommodation has been provided for those desirous of consulting the works which it contains. Books of all kinds have free admission into the country on the payment of a small duty, and have of late been imported in considerable quantities from France and England; evincing the increased desire for information which has extended itself over the country. Nothing, however, tends so much to demonstrate the advances made in intellectual pursuits by the inhabitants, as the great activity of the periodical press of Buenos Ayres. The newspapers are numerous, and generally well conducted. They contain much local information connected with statistics and commerce, numerous advertisements, and intelligence from other countries, more especially from the various New South American states. Three daily newspapers are at present published in Buenos Ayres, one of which has existed for eight years. There are various others published once, twice, or three times a week, among which are one in the French and two in the English language; one of the latter, the British Packet, having been published during the last six years. The free and unrestricted liberty of the press was established in 1821, and thereafter exercised in its fullest extent until 1828, when party spirit having become greatly excited, some publications displeasing to the existing authorities made their appearance, and led to the enactment of various restrictions on the freedom of discussion. Trials for offences of the press have in consequence since taken place, and no publications expressing opinions at variance with the policy of the ruling authorities have been allowed to make their appearance, while much difference of opinion has been known to exist. The preceding administration pursued a very different policy, and imposed no restrictions, but trusted to public opinion for a refutation of any calumnies raised against them. The tranquillity, contentment, and prosperity which

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prevailed at Buenos Ayres previous to 1828, when contrasted with the scenes which have followed, sufficiently demonstrate the great importance of allowing the utmost liberty in the expression of opinions on political matters.

Among the literary productions which have issued from the press may be enumerated the historical work of Dean Funes, in which are detailed all the events connected with the revolution and the war of independence; some dramatic productions of Varela; and recently there has been published a collection of Buenos-Ayrean poetry, which is highly creditable to the talents and imaginative powers of the inhabitants. Among these the national ode written by the distinguished Don Vicente Lopez, the present minister for foreign affairs, particularly merits distinction. A statistical register was established in 1822, under the auspices of government, and published monthly for several years, containing the most minute and circumstantial statistical details. A literary society was also established, which, during its continuance, published periodically the *Abeja Argentina*, a work containing much scientific and useful information. A topographical society was formed, and the labours of its members have been most useful in fixing the limits of property throughout the province, the greater portion having been scientifically surveyed under its direction. Plans and maps of the various districts have been constructed, and some of them published. The results of the whole, and a general map of the republic, will, it is expected, be soon published under the able auspices and superintendence of the members of this department. No sale or transfer of property can now take place in the province without a previous survey of it being made to the satisfaction of this department.

Laws.

Few alterations have been made in the Spanish laws which regulated these countries; and these have been principally for the purpose of rendering them more applicable to the new political condition of the country. Their administration has, however, been much improved; judges have been made independent in the exercise of their functions; and justices of the peace, to take cognizance of all cases in the first instance, have been established in the city and all parts of the provinces, each being resident in the centre of his district for the administration of justice; an institution which has been attended with the most satisfactory results. The administration of justice is still, however, very defective in many respects. The plan of a new system has been prepared by the *Camera de Justicia*, which, it is expected, will be adopted; but it is objectionable in as far as it does not admit of *viva voce* evidence. All offences committed by the press are decided by the verdict of a jury, but no law has yet been made to regulate the impartial selection of persons qualified to sit on such juries; they have hitherto been chosen by the government, a power which appears very liable to abuse. The law of primogeniture does not exist in this country, the property of each parent, on his or her decease, being divided equally among all the children; an additional share, however, may be reserved and bequeathed by the parent to such of the children as may have been most deserving of such a distinction.

Religion.

Since the commencement of the revolution this country has been deprived of the services of the Bishop of Buenos Ayres, who was a suffragan of the see of Lima. On that occasion the government assumed to itself the authority of the head of the church, the pope having repeatedly refused to acknowledge their independence, or to interfere in their church affairs; and it authorized an ecclesiastical senate to exercise these functions, which it did until the 23d March 1831, when, in consequence of his holiness having acknowledged the independence of the republic, Dr Don Mariano Medrano was selected from a list of two submitted to him for that purpose on the part of the go-

vernment, and created Bishop of Aulon and apostolic vicar of the diocese of Buenos Ayres; and he has since been formally recognized as the head of the Catholic church of the Argentine republic. The authority has been transferred to him which had been previously exercised by the ecclesiastical senate under the auspices of government; but this transfer was not accomplished without considerable resistance on the part of that body. The long-continued suspension of all direct connection between his holiness and the church of Buenos Ayres has broken asunder the link which formerly bound them so closely together; and the general diffusion of education and intelligence has produced important changes on the public mind, which will prevent the Catholic church from ever again attaining that ascendancy in this country which it once possessed.

During the early part of the revolution, the Catholic clergy, from their activity and influence over the community, exercised a considerable, and often pernicious influence in the politics of the country, being generally opposed to the introduction of improvements of every kind. It became, therefore, a primary object with the government, in its endeavours to remodel the political institutions of the country, to liberate itself from this source of distraction. Accordingly, most rigorous measures were pursued to introduce extensive reforms in ecclesiastical affairs. A board was named to take possession of the rents of the convents, and to examine the inmates and internal economy of these establishments; all convents were abolished which contained less than sixteen or more than thirty inmates; the retiring members of the suppressed convents were allowed a yearly salary, and permission to proceed to whatever place they might choose; and no friars were allowed to enter the province, without previously obtaining special permission from the government, while every difficulty was at the same time thrown in the way of further seclusion, by restricting the age of profession to twenty-five, and to those obtaining a license from the government. By these means many convents were suppressed, and their chapels converted into parish churches; and, under the new regulations, the service of the church has been performed with an efficiency and splendour previously unknown. The tithes were abolished, and funds provided by the state for the expense of the churches; and the salaries of the dignitaries and other ministers of the Catholic church were judiciously regulated. These measures of reform were carried forward with much vigour, and powerfully aided by the Centinela, a well-conducted periodical, instituted for the express purpose, and which exercised much influence on public opinion. These exertions proved so completely successful, that at the present time not more than one or two convents are in existence at Buenos Ayres, and the greater part of the friars who have not become secular clergy have left the province. Two nunneries still exist in this city, but their inmates do not increase in number; on the contrary, facilities have been afforded to those nuns who were dissatisfied with their life of seclusion, to liberate themselves from their vows, and to leave these establishments; a privilege which has already been taken advantage of in some instances.

Since the commencement of the revolution a spirit of toleration has been forming at Buenos Ayres, and becoming stronger in proportion as their intercourse with foreigners became more extended; and it was so much strengthened by those vigorous proceedings of the executive in reforming the ecclesiastical affairs of the country, that at length the government were enabled to establish toleration legally, which had previously existed only by sufferance. In concluding a treaty with Great Britain, on the 2d of February 1825, it was provided that no British subjects resident in the united provinces of the Rio de la Plata

shall be disturbed, persecuted, or annoyed on account of their religion, but have perfect liberty of conscience and of public worship; the government reserving the right of formally approving of the formation of all places of public worship. This article of the treaty was sanctioned by all the members of the congress of the United Provinces, including eight of the secular clergy, with only two dissentient voices.

On the 12th of October of the same year the provincial legislature of Buenos Ayres enacted the following law in favour of religious toleration, which was sanctioned by the government, and has ever since been in operation. "Every individual in the province of Buenos Ayres shall enjoy the inviolable right of worshipping Almighty God in the manner which his conscience may dictate to him; and the exercise of this religious liberty shall only be subject to the regulations which are prescribed by good morals, public order, and the established laws of the country." That practical toleration fully exists in Buenos Ayres, is proved by the existence there of one Protestant Episcopal church, two Presbyterian chapels, two Sabbath evening schools, and a Bible society.

Since the administration which accomplished these important changes in the religious institutions of this country ceased to exercise its functions, its successors have relaxed somewhat in the strictness with which the regulations were enforced, and some indications have been given of a desire to restore, in some respects, the exclusive system which formerly prevailed, but fortunately with little prospect of success; for the measures of ecclesiastical reform previously adopted were too efficient, and pursued with too much vigour and success, and the inhabitants have become too intelligent ever again to submit to the religious thralldom to which they were formerly subjected.

The manners and customs of the inhabitants of Buenos Ayres have undergone many remarkable changes since the country became independent. The general diffusion of education and intelligence, the extensive intercourse maintained by its inhabitants with other nations, and the influence and example of the numerous foreigners who have been temporary or permanent residents among them, have all powerfully contributed to improve their moral, intellectual, and social condition, and to place them in a position more in accordance than formerly with the present state of civilization in other parts of the world. In these respects they have made greater progress than any other of the new states, and exercise an extensive and beneficial influence on the moral and political opinions of their contemporaries all over the South American continent. The natives of Buenos Ayres are active, intelligent, and enterprising, and may be met with in most parts of South America, engaged in commerce, agriculture, and other branches of industry. They are polite and affable in their manners, sober and temperate in their habits, and possess considerable vivacity and good natural abilities; they are, however, not remarkable for intense application or perseverance, but rather fickle, and prone to novelty, owing perhaps to the circumstance of their having lived in times so fraught with change and innovation; and this tendency is evinced in a variety of ways. They are fond of dress, and set the fashions to the other provinces, where, notwithstanding they are imitated, they are often held up to ridicule for their attention to external appearances. Being now more occupied than formerly in useful and rational pursuits, they are less addicted than heretofore to gambling and other demoralizing amusements. The diversions of the carnival have been discountenanced; the cruel practice of cock-fighting has lost much of the interest and importance it once possessed; and bull fights have long since been abolished, as tending to brutalize the feelings of the community, and unworthy of a civilized nation.

The ladies, however, are by far the most interesting part of the community in this city. They possess the black eyes, delicate features, and handsome figures of Spain, and know well how to set off their charms to the greatest advantage, by the neatness and elegance of their attire and the gracefulness of their carriage while on the promenade. They are affable and unassuming in their manners, and possess great vivacity, but tempered with so much suavity of demeanour as tends to diffuse a charm over their society, which is very attractive, especially to foreigners, who are generally well received. Their evening parties, or *tertulias*, which are exceedingly agreeable, are frequent and well attended; they are diversified by conversation and a variety of amusements, and generally enlivened by music and dancing, in which they excel. The Spanish costume has now nearly become obsolete, and their dresses are generally modelled after the French and English fashions. The ladies of Buenos Ayres have in many instances formed matrimonial alliances with the foreigners settled amongst them, and have, with few exceptions, proved most amiable and exemplary wives. The social and domestic habits of the strangers, especially those from Great Britain, give them in many instances a decided preference over their own countrymen in the estimation of the fair sex of Buenos Ayres, as the latter are much more in the habit of passing their leisure and evening hours in the coffee-houses, or in other society, than in the midst of their own families.

The peasantry or *gauchos* of Buenos Ayres have many remarkable peculiarities in their character, arising from their manner of living and the occupations in which they are principally engaged. They pass the greater part of their time in the open air, and are almost continually on horseback. Their horses are saddled in the morning, and kept in readiness for use during the whole day, as no one in this country ever thinks of walking even a short distance on foot. They are rather indolent in their domestic habits. They live in rude habitations formed of mud and reeds, possessing very few conveniences, and only some rude articles of furniture. Their food principally consists of beef, besides which they possess few luxuries; yet seem very happy and well contented with their situation, having few external wants, and enjoying a considerable extent of personal liberty and independence. They are kind and hospitable to strangers, courteous in their manners, and often possess many estimable qualities.

Crimes of an atrocious nature, such as murder and robbery, rarely occur among them. Such deeds have occasionally been perpetrated during the civil dissensions, but have in almost every instance been committed by deserters from the army, and not by the peasantry of the country. As an evidence of the confidence which is with justice reposed in their honesty, may be adduced the well-known fact, that, until a late period, couriers and others have been in the constant practice of carrying quantities of gold and silver from Chili, Bolivia, and the interior provinces, to Buenos Ayres; and although generally alone and unarmed, very few instances have occurred of their having been robbed or maltreated. Travellers, both natives and foreigners, are continually traversing the country in all directions, and have in general enjoyed the same immunity.

The *gauchos* are all trained from their earliest years in the art of horsemanship, and acquire great dexterity in the management of their steeds and in the performance of all the evolutions practised on horseback. The throwing of the noose or *lasso*, and the *bolas*, at full speed, is generally performed with so much precision and certainty, that the animal they are in pursuit of seldom escapes. But to perform these feats in perfection requires much practice

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and early training. It is customary to see little boys employing their mimic *lassos* and *bolas* in catching dogs, cats, poultry, and other small animals. In some parts of the country young boys first acquire the art of riding by being mounted on sheep, which are equipped with miniature saddles and bridles, and are rendered docile and easily managed by feeding them occasionally with salt, and otherwise treating them with care and kindness. Parties of boys may occasionally be seen proceeding to or from school mounted on these little chargers, and vying with each other in the performance of races and other equestrian exercises. A *gaucho* fully accoutred and mounted on horseback is one of the most independent persons imaginable, as he carries along with him almost every thing requisite to supply his immediate wants. The saddle is not only useful during the day-time, but at night serves all the purposes of a bed, and the majority of the peasantry never use any other. It consists of two portions formed of tanned leather; the largest is spread out on the ground, and the other part serves as a pillow. The *jergas* or coarse woollen blankets which are manufactured in the country, and some prepared sheep-skins, which are placed underneath and over the saddle when riding, serve all the purposes of blankets during the night, with the addition of the *poncho*. When on a journey, or employed at a distance from their habitations, they carry a supply of provisions in a pair of *alforjas*, or small woollen bags, and water in a pair of *chifles* or bullock's horns slung across the saddle. While on horseback they carry the *lasso*, coiled up and ready for use, one extremity being attached to an iron ring on one side of the saddle, and the *bolas* to the other side; by these means they often supply themselves with game and other articles of food when necessary. The *lasso* serves to secure their horses during the night, or they use two small portions of hide attached to each other, which are fastened to the horse's fore legs, and are removable at pleasure: this contrivance permits them to feed, but not to stray to a distance. The Spanish bit or bridle is universally used in this country, and is considered as more secure than any other, giving the rider the most complete command of his horse, and enabling him to perform a variety of evolutions on horseback with great dexterity and precision. Their reins are formed of plaited hide, and variously ornamented; they are lengthened out so as to serve the purposes of a whip and other uses to the rider. The girths of their saddles are formed principally of a network of hide, into the meshes of which the rider can at pleasure entangle the large blunt rowels of his spurs, when requiring to secure a firm seat on his horse on making any unusual or difficult exertion.

The dress of the *gaucho* consists of a short jacket, with breeches or drawers open at the knees. A woollen or leathern belt is worn round the loins, to which they secure a large knife inclosed in a sheath, and a pouch containing tobacco, and the *yesquero* or tinder-box, usually formed of the tail of the armadillo. Their feet and legs are protected by *botas de potro*, or boots formed from the skin of the hind legs of the horse or mare, to form which, the skin is cut round in the middle of the thigh, and above the fetlock, and then stripped off; the hair is removed by the knife, and in its moist and pliant state is drawn over the leg and foot, to adapt itself in drying to the shape of the limb, the upper part forming the leg of the boot, the bend at the knee being fitted to the heel, and the lower part covering the foot. They generally wear a handkerchief tied round the head, with the corners hanging down to keep them cool, and to avoid the annoyance of mosquitos in warm weather; over it is worn a small straw hat. The *poncho*, which is universally worn as an outer garment, is a most useful and convenient article of dress, especially

on horseback, as it covers the whole of the trunk of the body, leaves the arms free, and, when of good quality, throws off the rain. It is composed of a cotton or woollen cloth, woven by the Indians, and is sometimes very handsome, from the tasteful display of the rich colours employed in its formation. Ponchos are from six to eight feet in length, and four or five in breadth, having in the centre a slit sufficient to allow the head to pass through; and they fall down in graceful folds before and behind, being variously ornamented along the edges. The value and richness of the clothing and horse accoutrements of the *gauchos* vary considerably, according to the wealth and taste of the individual, some indulging in silver spurs, and various ornaments for their horses of the same metal, but all of them partaking more or less of the same general character.

It is not intended on this occasion to give an account of the political history of Buenos Ayres, which with more propriety will merit consideration in the article La Plata; a few observations, however, on this subject are requisite to illustrate the present state of the country.

During the first years of independence, little progress was made in organizing the government, or in establishing the political institutions of the country on an efficient basis. The measures had recourse to from time to time were more calculated to serve temporary purposes than to produce permanent results. A variety of circumstances conspired to produce disunion and discord among the provinces, the greater part of which were in a state of complete isolation, with separate and independent governments, and by their provincial legislatures enacting laws much more calculated to promote individual and local interests than to favour the general industry and prosperity of the country. From these and other causes they were frequently at variance with each other, and all were more or less inimical to Buenos Ayres, which they viewed with a jealous and invidious eye, on account of its superior wealth, and the greater influence which it exercised in all public affairs. The authorities of Buenos Ayres were implicated in a plan to give a new form to the government, by the introduction of a foreign prince from Europe; but they completely failed in the attempt, not, however, without causing great excitement among the inhabitants, which terminated in civil war at Buenos Ayres and the adjoining provinces. These occurrences, however, interrupted the commerce with the interior, and occasioned great loss of life and property. During the year 1820, when these transactions took place, the changes in the government of Buenos Ayres were frequent, and the authority assumed was in some instances of very ephemeral existence; but this state of affairs was brought to a termination in October of the same year, by the forcible entrance into the city of the party under the direction of Don Martin Rodriguez, who was soon afterwards elected governor of the province of Buenos Ayres.

Under his auspices was formed an efficient and enlightened administration, composed of individuals well qualified to discharge the important duties intrusted to them, and unobjectionable to all parties, as they had been some time absent in the service of their country, and had taken no part in the political disputes which had previously divided the inhabitants. Don Bernardino Rivadavia, who had been in Europe on a diplomatic mission, and had become conversant with the institutions of those nations farthest advanced in civilization, became the leader of the new executive, and by the activity and energy of his character infused a degree of vigour into all their proceedings, which inspired general confidence, insured the ultimate success which so eminently attended their labours, and conferred important and lasting benefits on their country.

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The aspect presented by the various provinces at this period offered little prospect of success in any attempt to form an efficient general government by the union of such discordant materials. It was therefore deemed expedient, in the first place, to use every exertion to introduce an improved internal organization into all the provinces, although still in a state of separation, and more especially into the city and province of Buenos Ayres, by far the most important and influential in every point of view, and the best calculated by its example to produce beneficial consequences in all the interior provinces.

The attention and active energies of the new government of Buenos Ayres were therefore principally directed to remodel and improve the various moral and political institutions of the city and province, and the changes introduced were principally the following:—The provincial legislature was formed of representatives elected by the direct suffrages of the citizens; the persons and property of every one, foreigner as well as native, were rendered inviolable; and no imposts or contributions of any kind were allowed to be imposed, or any of the public funds to be expended, except by authority of the legislature. Publicity was given to all the proceedings of the legislature and of the government; and the public accounts of all the departments were published at stated periods. The imposition and collection of the public revenue were regulated on judicious principles, so as not only to augment the amount of the revenue, but effectually to put an end to the extensive contraband which had previously prevailed. The public expenditure was regulated on the most economical principles. The military officers, and others who had devoted themselves to the service of their country, were rewarded according to their respective merits and services. The debts due by the state were consolidated, and means provided for their gradual extinction. Afterwards, when circumstances had led to the accumulation of new debts, the sale of all public lands was prohibited, and they were preserved as a guarantee for the ultimate payment of the public debts. These lands, however, were not kept in an unproductive state, but rendered available for agricultural purposes by a judicious system of leasing. The administration of justice was also greatly improved, and rendered more efficient. The police and other municipal establishments were remodelled or improved, and rendered much more efficient than previously. Education in all its branches was encouraged and promoted, every facility being afforded to the general diffusion of knowledge. The liberty of the press was established and guaranteed to the community. Various important reforms in the church establishment were satisfactorily accomplished, and the enjoyment of complete religious liberty was established by law. Industry and enterprise were promoted, and every encouragement was given to the ingress of industrious persons from other countries. Savings banks were instituted to assist the industrious in the accumulation of their savings. The formation of roads, bridges, canals, and various other public undertakings of acknowledged utility and importance, was commenced and prosecuted.

Much energy, zeal, and perseverance, were exemplified by the government and their supporters in the prosecution of these beneficent plans for ameliorating the institutions of this country, and in their progress they were powerfully aided by the publicity given to all their transactions, which diffused general confidence; and by the judicious use of the periodical press, public opinion was prepared for the reception of these innovations. Tranquillity prevailed at this period over all the provinces, and a marked improvement took place in the general prosperity of the country, not only in the city where it commenced, but throughout the other provinces, where the example of

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Buenos Ayres exercised a great and beneficial influence. In these the progress of Buenos Ayres towards improvement was watched with much interest and attention, and the valuable productions of its press were received with the utmost avidity. The patriotic feelings of the inhabitants of the provinces were much excited by these occurrences, and the more intelligent among them directed their attention to the most effectual means of profiting by the example given them by their neighbours; accordingly, in some of the provinces, considerable progress was made in the improvement of their local institutions and government.

On 1st April 1824 some changes took place in the government. Rodríguez, having completed the legal period of his service as governor, was replaced in that office by General Las Heras. On that occasion Rivadavia, although repeatedly urged to continue his services, retired from office and went to Europe, leaving in the entire charge of the executive government his colleagues Don Manuel José García and General Cruz, who, equally zealous and interested in the success of the measures which had been adopted, did not relax in their exertions to give them permanency. The improved state of the provinces, and the desire evinced by them for a general union, indicated the time as propitious to the formation of a general government. The authorities of Buenos Ayres therefore sent commissioners to the various provinces to make the preliminary arrangements; deputies were assembled from all the provinces; and the national constituent congress was formally installed at Buenos Ayres on the 16th December 1824.

The independence of these provinces had been already acknowledged by the United States of North America and Brazil; but on the 2d February 1825 Great Britain also conferred on them this important act of justice, by concluding with the government of Buenos Ayres a treaty of amity, commerce, and navigation, which was approved of and sanctioned by the general constituent congress, and was hailed with general satisfaction, from its connecting them so closely with one of the most powerful European states, and giving the new republic a respectable status among civilized nations. In the arrangement of this treaty much advantage was derived from the liberality and judicious policy pursued by García, then minister for foreign affairs. Their independence was acknowledged by France in 1830, and by the Pope in the following year.

So many innovations in the institutions of Buenos Ayres as those which have been enumerated could scarcely fail to produce opposition on the part of those persons whose interests or prejudices were affected. The clergy in particular, in many instances, made use of the influence they possessed over the prejudices of the people to accomplish this object, and considerably augmented the number in opposition. An attempt was on one occasion made to overturn the administration by violence, and to awaken the religious prejudices of the community by raising the cry that their religion was in danger; but the attempt completely failed. This party did not renew these violent attempts, but still continued their opposition, becoming from various circumstances more numerous and united in their views. During the debates which took place in the national congress, they used their influence to thwart the policy recommended by the government party; and their number being augmented by the accession of many of the provincial deputies, an origin was thus given to the political party which subsequently assumed the name of federal (*federales*).

A dispute had subsisted during some years between the government of Buenos Ayres and the court of Brazil, in consequence of the occupation of the province of the Banda Oriental by the troops of the latter power; and all

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the efforts of Buenos Ayres to induce them to retire proved ineffectual. During 1825 General Lavalleja landed with thirty-two resolute followers in the Banda Oriental; and having raised the standard against the Brazilians, he was speedily joined by numbers of his countrymen, and defeated his opponents in various engagements. The provincial legislature assembled, and requested that their province might be admitted into the Argentine confederation, which was agreed to by the constituent congress on the 25th October 1825. Upon this ground the emperor of Brazil declared war against Buenos Ayres on the 10th December; an example which was followed, on 3d January ensuing, by the government of Buenos Ayres, with the full concurrence of the congress. About this time Rivadavia returned from Europe, bringing with him from London the ratified British treaty, and was elected president of the Argentine republic on the 7th February 1826 by the constituent congress. The provincial government and legislature were then dissolved, and the duties of the former devolved on the president of the republic.

After prolonged discussion, the new constitution of the Argentine republic was completed, and subscribed on the 24th of December 1826 by all the members of congress. The form of government agreed upon was the representative republican, with unity of regimen; the representatives being to be chosen by direct suffrages of the citizens, the senators and president by electors chosen by the citizens. Each province was to be under a governor chosen by the president of the republic from three persons elected by the inhabitants, and assisted by a council of administration elected by the citizens. To become legal, the constitution required to be approved of by two thirds of the provinces. The final adoption of this constitution, which was considered by competent judges as well suited to the existing state of the country, was at first postponed, and finally prevented, by the active exertions of the federal party in the provinces, and the increasing difficulties and embarrassments of the general government, occasioned by the continuance of the war with Brazil. But this war had been carried on with a degree of success which rendered it very popular with the people. The contest was principally supported from the resources of Buenos Ayres and the Banda Oriental, as they received little assistance, even in men, from the other provinces; those sent from Mendoza and other places having been either intercepted, or so diminished by desertion, encouraged by the federals, that few ever reached their final destination. The scarcity of funds at the disposal of the executive to carry on the war led to the conversion of the private bank of discounts, which had previously prospered, into a national bank; an expedient which soon afterwards produced the most fatal consequences to the credit and prosperity of the country, and produced the great depreciation of the currency formerly noticed.

In April 1827 the government made an effort to terminate the war, by sending Garcia to the court of Brazil to negotiate a treaty of peace under the mediation of the British authorities; but the hopes of the government and of the people were frustrated by Garcia's deviating so far from his instructions as to agree to cede the Banda Oriental to the emperor. This preliminary convention was disapproved of by the president of the republic and the constituent congress, and consequently was never ratified. Although no blame could with justice be attributed to the executive on this occasion, this transaction led to the cessation of that administration which had been paramount in Buenos Ayres for upwards of six years, and had produced such lasting and beneficial consequences to the country. Rivadavia perceiving that, by continuing in office, he could no longer preserve the honour or consult the permanent

interests of his country, voluntarily resigned the presidency on the 27th of June 1827, and his example was followed by all his ministers. All prospect of forming a permanent union of the provinces having now vanished, the congress dissolved itself, and each of the provinces returned to its former state of isolation and self-government.

On renouncing the presidency, Rivadavia retired into private life, and having since principally resided in Europe, he has on no occasion taken part, either directly or indirectly, in the political transactions of his country. His merits as a practical politician, which are of the highest order, will be long held in grateful remembrance by the more thinking part of his countrymen, and will receive due homage from posterity; and the numerous and important institutions which he established and brought to maturity will serve as lasting monuments of his sound judgment and eminent talents. Had the same influence which proved so beneficial in the only province where his authority was ever fully established, been equally extended to the other provinces, they would by this time have undoubtedly presented an aspect of prosperity and contentment which would have formed a striking contrast to their present desolate condition.

Those persons who favoured the policy of Rivadavia, and advocated the adoption of the constitution sanctioned by the congress, were called unitarians (*unitarios*), and at first comprised a large proportion of the wealth and talents of the country; but subsequently they were joined by many others actuated by less pure and patriotic motives, who, in assuming the name, forgot the principles which originally gave rise to the distinction. The spirit of faction and of individual aggrandisement seems principally to have influenced the subsequent proceedings of both parties, and to have given origin to the numerous evils which have befallen their country.

On the resignation of Rivadavia, the management of public affairs was intrusted to Dr Don Vicente Lopez; and the provincial legislature having been assembled, Don Manuel Dorrego was afterwards elected governor of the province, and obtained from the other provinces full powers to manage all their foreign relations. Accordingly, under his government the war with Brazil was brought to a satisfactory termination in the latter part of 1828. On the army being withdrawn from the seat of war, many of the principal officers concerted measures to overturn the influence of the federal party in Buenos Ayres and the other provinces. On the 1st of December 1828, a movement was successfully made by General Lavalle in Buenos Ayres, and hostilities commenced with the ex-governor Dorrego. He was defeated and taken prisoner at Navarro on the 9th, and was shot without trial on the 13th by order of Lavalle. This arbitrary act, which cannot be justified on any principle, was productive of the most fatal consequences, by giving to the civil war that sanguinary and vindictive character which it has since maintained. Lavalle became governor of Buenos Ayres, but had to sustain a contest with the federal party under Don Juan M. de Rosas, who, possessing great influence with the inhabitants of the country, cut off his supplies, besieged him in the city, and at length obliged him to form a convention on the 24th of August 1829, by which Lavalle consented to relinquish the government of Buenos Ayres, and soon afterwards retired to the Banda Oriental. General Paz, an officer distinguished for his public and private virtues, as well as bravery, obtained the entire ascendancy in the central province of Cordova, and was successful in surprising and totally defeating the federal forces opposed to him, on the 25th of February 1830; but he did not, on this occasion, retaliate on his opponents for the great excesses and cruel assassinations they had per-

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petrated on the adherents of the unitarian party, more especially at La Rioja and Mendoza.

A period of tranquillity followed the victory of Paz, who thereby obtained for the unitarians the entire ascendancy in all the interior provinces; various attempts were made at conciliation, but without success; and at length both parties commenced preparations for the approaching contest. The civil war again commenced in the early part of 1831, with evident advantage to the federal party, who had at their command all the resources of Buenos Ayres, and numerous adherents among the peasantry. An accidental occurrence greatly contributed to increase the influence and power of the federals, and to dispirit their opponents; for on the 10th of May General Paz, while engaged in reconnoitring the positions of his adversaries, was taken prisoner by a small party placed in ambuscade. Soon afterwards General Quiroga carried the war into the provinces of Cuyo and La Rioja, and was successful in all his rencontres with the unitarians. He followed up his advantages, the unitarians retiring from Cordova to the province of Tucuman; and having met each other at Ciudadela, in that province, on the 4th of November, an obstinate and sanguinary battle ensued, in which the unitarians were totally defeated and dispersed. Thirty-nine of the principal officers, who were afterwards taken prisoners, were shot by order of Quiroga, and the remainder escaped into the province of Salta. The war was at length brought to a conclusion on the 4th of December 1831, by means of a convention formed between Quiroga and the authorities of Salta, in which it was expressly provided that all the unitarian officers should be obliged to leave the Argentine Provinces. Thus has terminated the civil war which prevailed with more or less violence during the last three years; covered these fine provinces with desolation and bloodshed; interrupted the progress of industry in all its branches; paralyzed the commerce with the interior; and greatly diminished the commercial intercourse of Buenos Ayres with other countries. The civil war has not, however, been the only cause of the depressed state of agriculture and commercial industry at Buenos Ayres; the long-continued drought which has prevailed throughout the province during nearly the whole of the last three seasons has been much more fatal in its consequences, as it has occasioned the total failure of the crops, and the destruction of multitudes of cattle, horses, and other stock. The latest intelligence from Buenos Ayres, dated 4th April 1832, intimates that this disastrous period had at length happily terminated by copious rains; that tranquillity prevailed in all the provinces; and that, as considerable quantities of produce were coming from the interior, commerce was expected to improve.

It will require some years of tranquillity and good government to restore Buenos Ayres and the other pro-

vinces to their former prosperity; but with a country possessed of so many natural advantages, and a population so elastic and enterprising in their character, that period under ordinary circumstances cannot be far distant. The federal party, who now possess the entire control over all these provinces, will have ample opportunities of proving how far the system of government which they have hitherto advocated is calculated to promote the happiness and prosperity of their country. A treaty of alliance, offensive and defensive, was formed in 1822, between the littoral provinces of Santa Fè, Corrientes, Entre Rios, and Buenos Ayres, the provisions of which, with little interruption, have ever since been maintained. In 1830 this alliance was renewed, each province binding itself to the adoption of the federal system of government. Since the termination of the civil war several of the interior provinces have indicated their desire to unite with these provinces; an example which will probably be soon followed by the remainder. But there are well-founded apprehensions that they will fail in their attempts to establish a federal republic at all similar to that of the United States of North America, which they profess to imitate; all the provinces excepting Buenos Ayres being deficient in population, wealth, intelligence, and the other requisites essential to the establishment of efficient local governments. As an evidence how imperfectly they know their true position and interests, it is sufficient to state that each of the provinces has its own custom-house laws, import and transit duties being imposed on all commodities coming from any of the other provinces. The only prospect of success amidst so many difficulties will be the formation of a greatly modified federation, in which, however unwilling the provinces may be to acknowledge it, the province of Buenos Ayres, from its advantageous position, and its greater wealth and intelligence, must necessarily maintain a decided ascendancy over them; and if tranquillity can be preserved, time and experience will eventually convince them of their true interests, and remove the impediments which have hitherto prevented their union. The present institutions of Buenos Ayres have now existed in full operation during a sufficient time to establish themselves in the good opinion and affections of the community; and no apprehension need be entertained of their permanency, especially during the administration of the present governor Rosas, who has much influence in the province; while by his active endeavours to promote education, to encourage industry, and to civilize the Indians, he has merited the confidence and good will of his countrymen.

Wilcock's *History of Buenos Ayres*; Brackenridg's *Voyage to South America*; Caldeleugh's *Travels in South America*; Account of the United Provinces of Rio de la Plata, translated from the Spanish of Nunez; Beaumont's *Travels in South America*; *Memoirs of General Miller*. (v. u.)

BUFFET was anciently a little apartment, separated from the rest of the room by slender wooden columns, for the disposing of china, glass-ware, and other articles. It is now properly a large table in a dining-room, called also a sideboard for the plate, glasses, bottles, basons, &c. to be placed on, as well for the service of the table as for magnificence. In the houses of persons of distinction in France, the buffet is a detached room, decorated with pictures relative to the subject, with fountains, cisterns, and vases. It is commonly faced with marble or bronze.

BUFFIER, CLAUDE, a distinguished writer, born in 1661, became a Jesuit in 1679, and died at Paris in 1737. There are many works by this author, showing deep penetration and accurate judgment. The principal of these

is entitled *Un Cours des Sciences*, or a Course of Sciences, upon principles new and simple, in order to form the language, the understanding, and the heart. Paris 1732, in folio. This collection includes an excellent French grammar upon a new plan, a philosophic and practical treatise upon eloquence, an art of poetry, which, however, is not reckoned the best part of the miscellany, elements of metaphysics, an examination into vulgar prejudices, a treatise of civil society, and an exposition of the proofs of religion; all full of reflections, just as well as new. He was the author of several other works, particularly, 1. *Pratique de la Mémoire artificielle*, Paris, 1715, 4 vols. 12mo; 2. Some historical works, an Introduction to the History of the Sovereign Houses of Europe, an

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Buffon.

Abridgment of Spanish History, and an Account of the Origin of the Kingdom of Sicily and Naples; 3. Various treatises on religion and piety. In his *Cours des Sciences* Buffon has anticipated, though he failed to develop and pursue to its consequences, that peculiar system of mental philosophy which resolves all the ultimate principles of belief into the perceptions or suggestions of what is called common sense; and indeed it seems pretty certain that Dr Reid has been indebted to the learned Jesuit for valuable hints on nearly all the purely speculative points treated of in his *Intellectual Philosophy*.

BUFFON, GEORGE LOUIS LE CLERC, COUNT OF, a celebrated naturalist, was born at Montbard, in Burgundy, on the 9th of September 1707. His father, Benjamin le Clerc, was a counsellor of the parliament of Dijon, and the son was destined to the same office, if science had not drawn him away from the law. He studied at Dijon; and his eager activity, his acuteness, penetration, and robust constitution, fitted him to pursue business and pleasure with equal ardour. His early passion was for astronomy, and the young Le Clerc was seldom without Euclid in his pocket. At the age of twenty he went with an English nobleman (the young Duke of Kingston) and his tutor to Italy; but he overlooked the choicest remains of art, and amidst the ruins of an elegant and luxurious people he first felt the charms of natural history, of which he afterwards proved the zealous and successful admirer. On his return to France he fought, on some accidental quarrel, with an Englishman, whom he wounded, and was obliged to retire to Paris, where he translated Newton's *Fluxions* from the Latin, and Hales's *Statics* from the English, into the French language. He afterwards went to England at the age of twenty-five, and remained there about three months. This concluded his travels. At the age of twenty-one he succeeded to the estate of his mother, which was valued at about 300,000 livres, or £12,000 sterling; and he was one of those whose easy or affluent circumstances urge them on to literary pursuits, and clear the path of some of its thorns. Perhaps this was the period of his retirement to Montbard, where he spent much time, and where his leisure was little interrupted; for whilst he resided in the capital, his office of intendant of the king's garden and cabinet occupied much of his time. He loved company much, and was partial to the fair; but he loved fame more. He spent fourteen hours every day in study; yet when we examine the extent of his knowledge and the number of his works, we wonder at his having executed so much even in that time. At five in the morning he retired to a pavilion in his vast gardens, and he was then inaccessible. This was, as Prince Henry of Prussia called it, the cradle of natural history; but she was indifferently accommodated. The walls were naked; and an old writing-table, with pen, ink, and paper, and an elbow chair of black leather, were the only furniture of his study. His manuscripts were in a cabinet in another building, and he went occasionally from one to the another. The eras of Buffon's works are pretty well known. When each was finished it was put aside, in order that he might forget it, and afterwards return to it with the severity of a critic. He was anxious to render it perspicuous; and if those to whom he read his works hesitated a moment, he changed the passage. The works of others he often read like Magliabechi, confining himself to the titles, the contents, and the most interesting parts; but he perused M. Neckar's *Compte Rendu*, and the Administration of the Finances, at length, and spoke of them with no little enthusiasm. His favourite authors were Fenelon, Montesquieu, and Richardson.

M. de Buffon's conversation was unadorned, rarely animated, but sometimes very cheerful. He was exact in his

dress, particularly in arranging his hair. He sat long at table, and then seemed at his ease. His conversation was at this time unembarrassed, and his guests had frequently occasion to notice some happy turn of phrase, or some deep reflection. His complaisance was very considerable. He loved praise, it is true, and even praised himself; but it was with such frankness, and with so little contempt of others, that it was never disagreeable. Indeed, when we consider the extent of his reputation, the credit of his works, and the attention with which they were always received, we need not wonder that he was sensible of his own value. It would perhaps have displayed a stronger mind to have concealed it. His father lived to the age of ninety-three, and almost adored his son; his grandfather to that of eighty-seven; and the subject of the present article exceeded eighty. He died in April 1788. Fifty-six stones were found in his bladder; and if he had consented to the operation of lithotomy, he might probably have lived longer. He left one son, who, near a high tower in the gardens of Montbard, erected a low column, with an inscription, to his memory. This son fell a victim to the tyranny of Robespierre during the reign of terror in France.

BUFFOON, a droll, or mimic, who diverts the public by his pleasantries and follies. Menage, after Salmasius, derives the word from *buffo*, a name given to those who appeared on the Roman theatre with their cheeks blown up; that, receiving blows thereon, they might make the greater noise, and set the people a laughing. Others, as Rhodiginus, make the origin of buffoonery more venerable, deriving it from a feast instituted in Attica by King Erectheus; called *buphonia*.

Buffoons are the same with what we otherwise find denominated *scurra*, *gelasiani*, *mimologi*, *ministelli*, and *joculatores*, whose chief scene is laid at the tables of great men. Gallienus never sat down to meals without a second table of buffoons by him. Tillemont also renders *pantomimes* by buffoons; in which sense, he observes, the shows of the buffoons were taken away by Domitian, restored by Nerva, and finally abolished by Trajan.

BUG, or BUGG. See ENTOMOLOGY.

BUGGERS (*Bulgarii*) anciently signified a kind of heretics, otherwise called *Paterini*, *Cathari*, and *Albigenses*. The word is formed from the French *Bougres*, and that from *Bougria* or *Bulgaria*, the country where they chiefly appeared. Among other errors, they held that men ought to believe no scripture but the New Testament; that baptism was not necessary to infants; that husbands who conversed with their wives could not be saved; and that an oath was absolutely unlawful. They were strenuously refuted by Friar Robert, a Dominican, surnamed the *Bugger*, as having formerly made profession of this heresy. The Buggers are mentioned by Matthew Paris, in the reign of Henry III. under the name of *Bugares*. *Circa dies autem illos invaluit hæretica pravitas eorum qui vulgariter dicuntur Paterini et Bugares, de quorum erroribus malo tacere quam loqui.*

BUGIA, a province of the regency of Algiers in Africa. It is almost surrounded with mountains, and peopled with the most ancient Arabs, Moors, or Saracens, called Kobayles. The province is very fertile in corn.

BUGIA, by the Africans called *Bugeiah*, a maritime town of Africa, in the regency of Algiers, and once the capital of the province of that name. It is supposed to be the *Saldæ* of Strabo, built by the Romans. Long. 4. E. Lat. 35. 30. N.

BUGIE, a town of Egypt, situated on the western shore of the Red Sea, almost opposite to Zidon, the port town to Mecca, and about a hundred miles west of it. Long. 36. E. Lat. 22. 15. N.

Builder
Building.

BUILDER, in the general sense of the term, an undertaker of works of building. With reference to the operations of civil architecture particularly, the builder stands between the proprietor and architect on the one hand, and the artizan, merchant, and manufacturer on the other: he engages to the first to carry a certain proposed work into execution, as he may be directed by the second, and saves to both of them the trouble and responsibility of procuring materials and employing workmen.

The builder's emolument arises from an improved price, or charges bearing an advance on the prime cost, to remunerate him for the use of his capital, and his own personal application or labour. A builder has the power also of deriving an advantage from the division of labour, by employing artizans in those operations only which habit enables them to execute with the greatest facility.

The builder contracts to do certain specified works for a certain total sum of money, the amount of which he determines by a previous estimate; or to do prescribed operations at so much for a certain fixed quantity of every sort involved, per yard, per rod, per foot, and so on, the amount to be ascertained, when they are completed, by measurement; or he executes works according to instructions or specifications, leaving the charges to be determined according to the usual and accustomed rates, on the quantities ascertained by admeasurement. In the two former cases he is said to work by contract, and in the last by measure and value. For jobbing, in repairs and alterations, a day account is kept; that is, a record of the time workmen are employed, and of the materials used, in performing certain operations. This is made out with an advance of so much per cent. on the prime cost, or wages of the workmen and selling prices of the unwrought materials, for the builder's profit or remuneration, as before stated.

A builder should be theoretically acquainted with the principles of construction, and practically conversant with the details of all the mechanic arts used in building; as well to be enabled to carry on his business with advantage to his own interest, as to the proper execution of the works he may undertake. He should be qualified to ascertain with the utmost minuteness, from the drawings of a design, and the specification of the manner in which, and matter of which, it is to be carried into execution, the quantity of labour, and materials of every kind and description, and the exact value of them all. In this is involved the necessity of being well acquainted with the market prices of raw and manufactured articles to a very great extent, and a matured judgment of the quantity of labour required, or how much time a workman will take to produce a certain result. These things, however, which involve the making of estimates on which to make contracts, in the practice of this country are generally referred to a surveyor or measurer, because of the general ignorance and incompetence of builders, or because of the greater aptitude of the latter, in consequence of their attention being solely occupied by such things.

BUILDING. Any work of civil architecture while in progress is familiarly termed a building. This substantive use of a participial term may be thought to arise from the old habit of contracting an expression if it be long, and using a part for the whole: "*the house or church a building*," that is, in the course of building, or now being built, is more commonly spoken of as "*a building*," or "*the building*." The term is less correctly applied to edifices generally, without reference to their state of completeness or incompleteness; but this use of it should be avoided, as the term thus becomes less definite, and therefore less valuable.

BUILDING.

THE art of building comprises the practice of civil architecture, or the mechanical operations necessary to carry the designs of the architect into effect. It is not unfrequently called practical architecture; but the adoption of this term would have tended only to confuse, by rendering it difficult to make the distinction generally understood between architecture as a fine or liberal art, and architecture as a mechanical art. The execution of works of architecture necessarily includes building; but building is frequently employed when the result is not architecture: a man may be a competent builder without being an architect; but no one can profess himself a complete architect unless he be competent to specify and direct all the operations of building. A scientific knowledge of the principles of masonry, carpentry, joinery, &c. and of the qualities, strength, and resistance of materials, though of the utmost importance to an architect, is not sufficient of itself, without a minute acquaintance with a great variety of less ambitious details. Such are those which relate to the arrangement of a plan for the greatest possible degree of convenience on the smallest space, and at the least expense; its transference to the ground; the preparation and formation of foundations; the arrangement and construction of drains, sewers, and cess-pools; the varieties of walling with stone, and of bonding bricks in brick-work; the merit of the various modes of bonding and tying walls with timber and otherwise; the arrangement of gutters on roofs, to get sufficient fall, and to lead the water to the least inconvenient places for placing trunks to carry it down; the arrangement and formation of flues; the protection of walls from damp, of timbers from moisture and

stagnant air, and of metals generally from exciting causes; the cost of materials and labour, and the quantity of each required to produce certain effects. Together with these, it is important to be practically acquainted with all the modes of operation in all the trades or arts required in building. Every thing must be clearly understood, or it will be impossible properly to specify beforehand, in detail, every thing and every operation to be done and performed; and minutely to estimate, beforehand also, the absolute cost involved in the execution of a proposed structure. The power to do the latter necessarily involves that of measuring work, and ascertaining quantities after it is done. These things may certainly be referred to the surveyor or measurer, but they are not the less incumbent on the architect, who cannot be said to be thoroughly master of building, or the practice of his profession, unless he be skilled in these operations.

The architect having furnished the specification and working drawings of his design, the first operation is the preparation of the foundation. (See article **STONE-MASONRY**, sect. 60.) Much in this particular, it is evident, must depend on localities. It is not of so much importance that the ground be hard, or even rocky, as that it be compact, and of similar consistence throughout; that it be so constituted as to resist entirely and throughout, or yield equally to the superincumbent weight. In the latter case, however, there must be some contrivance to generalize the pressure, or the piers would sink away from the parts above and below the apertures. This danger is obviated, if the soil be tolerably consistent, by turning inverted arches, as we shall show in its place; or, the soil being too soft to offer resist-

Building. ance in the space occupied by a brick, by planking with timber or cast-iron frames, by laying one or more courses of strong thick paving stones, as wide at least as the whole extent of the footings of the walls, and each stone as large as may be; or, what in most cases is by far the best, by laying a compact mass of concreted rubble, sand, and quicklime, which will harden into a solid unbroken bed.

No foundation is more ineligible for a heavy structure than one that is rocky, especially if the rocks are in small masses, or, if a sufficient surface is offered of one mass, in strata which dip considerably: in the former case, from the rottenness of the soil in which rocks are generally bedded, and which consists for the most part of their detritus; and in the latter, from the liability of stratified rock to crack and slip, against which no precaution is available. Dry gravelly soils, again, are not only loose and infirm, but are exceedingly liable to vacuities of various extent, which are hardly sufficiently provided against by piling: wet gravel is generally more compact, and may be better trusted both with and without piles, or with the concretion before mentioned. A deep compacted sand will be found firm if a sufficient surface of it be embraced by the footings, which should be wider in that than most other cases. In large and deep beds of alluvial deposits the heaviest building may be laid with security, if the precaution before suggested be attended to for the equal distribution of the pressure throughout. The city of New Orleans, in a delta at the mouth of the Mississippi, rests on a bed of mud, which is held together by a bonding of trunks and arms of trees, but on a broad level bed below. Here the only precaution taken in erecting a structure of the greatest magnitude is to make the trenches for the walls wide and level, and to floor the whole of their surface with thick planks properly bonded: on these the footings are laid, and if any settlement occurs, it is of the whole edifice, and no injury accrues to any part of it at any time. Clayey and chalky soils are generally understood to form the best natural foundations: in these, under ordinary circumstances, no preparation is required, though for very heavy and unequally pressing works, such as bridges, which are placed on piers made as small as they possibly can be, piling has been considered a necessary precaution. Indeed, except perhaps on an extensive horizontal bed of firm compact rock, no foundation can be considered better than that afforded by piling in a deep clay. (For the process of PILING, see the article under that head.)

In the ordinary processes of building, however, the artificial preparation of foundations hardly need be considered. Common prudence would refer it to professional management, when such is found necessary; and a work of this kind cannot contain sufficient information and instruction to qualify a man to act professionally on any subject, and more particularly on those subjects which demand initiatory practice and experience. We therefore proceed to the ordinary routine of practice.

The artificers whose trades come within the immediate range of the builder's business are the following: Digger or excavator, bricklayer, mason, slater, sawyer, carpenter, joiner, plasterer, modeller, carver and gilder, plumber, smith, glazier, painter and decorator. Paving is done by the bricklayer or mason, as it may be of brick or stone, and tiling by the bricklayer.

Digger or Excavator.—The digger works with a pick-axe and a spade or shovel. With the pick-axe he breaks down the soil if it be hard or very stiff, and throws it out with the shovel; but compacted sand and alluvial soil is spitted and thrown out with the spade alone, without previous breaking down. In the former case, the digger works onward, or with his work before him, and in the latter backward, or standing on the part to be thrown out, as a gar-

denier does. When rock occurs in a foundation, the assistance of the quarryman is requisite to cut through or blast it, as the occasion may require. The digger must be careful to produce a perfect level in every direction, and especially in trenches for walls; nor may this be done by placing again loose matter, but the level must be produced on the solid or undisturbed bed.

Digger's work is valued by the cubic yard, and is generally made to include, besides excavating, the removal of the soil and rubbish. The price per yard is therefore necessarily contingent on the stiffness of the soil, the depth to which the excavations may reach below the surface, and the distance the stuff is to be removed; so that it is impossible to determine what the cost may be, without reference to each and all of these particulars, most of which must be different in every different place; and all are again affected by the local cost of labour or wages. A good excavator will dig and throw out, of common soil, into a basket or wheel-barrow, eight or ten yards per diem; but of stiff clay or firm gravel, not more than six yards. If the soil is to be carted away from the site of the proposed building, it may be more advantageously basketed out of the foundation, and deposited at once in the cart, whereby the labour of throwing or shovelling a second time is avoided; but if the soil is to be deposited in the immediate vicinity of the site, or thrown into a barge, wheeling is the quicker and more economical operation. The quantity of digger's work is ascertained by multiplying the length of the excavation by its breadth, and their result by the mean depth for cubic feet: these divided by 27 will give the amount in cubic yards.

Bricklayer.—The manufacture of brick being made the subject of a separate article, we need only refer to that for information on the subject; and in the same manner the components and merits of mortars and cements will be found in sections 20 *et seqq.* of the article under the head **STONE-MASONRY**. A few observations on the composition of mortar for bricklaying will nevertheless be necessary here.

Particular attention must be paid to cleansing the sand to be used for mortar, of every particle of clay or mud that may adhere to or be mixed up with it. Sea sand is objectionable for two reasons: it cannot be perfectly freed from a saline taint, and the particles are moreover generally rounded by attrition, caused by the action of the sea, which makes it less efficient for mortar than if they retained their natural angular forms. Lime should not be slaked until the moment it is to be mixed up with the sand in mortar, but the sooner that is done after it is burnt the better. The proportion of lime to sand is generally taken at one third or one fourth of the whole mass; but if both the materials be of good quality, that is, if the lime slake freely, and become a fine pungent impalpable powder, perfectly clear from argillaceous or any other foreign matter, and the sand clean and sharp, and of variously sized particles, one sixth of lime to sand is quite enough: more is injurious. The ingredients should be well mixed and beaten in a pug-mill, and as little water used as will suffice to make the compound consistent and paste like. Rain, or any other soft water, should be used for the purpose of making mortar, and not spring or hard water, though any other may be preferred to what is brackish even in the slightest degree. When mortar is made, if not immediately used it should be put into a close pit or case, and kept from the air, in which manner it will improve rather than deteriorate, though it be for weeks or even months: if however, the moisture be allowed to exude, it will set and be spoiled. When taken out to be worked up, it should be again well beaten, and wetted sufficiently to work freely, but no more: nor should it be re-made in this manner

Building. in larger quantities than are required for immediate or daily use. A quick-setting cement, such as that which is most commonly used in building in this country, and known as Parker's or Roman cement, can only be mixed or gauged as it is required for use. A bricklayer will keep a labourer fully employed in gauging cement for him alone. It is mixed with sand in the same manner that lime is in common mortar, in the proportion of about three or four of sand to one of cement, according to the quality of the latter; and the labourer, as he gauges on one board, supplies the mixture to the bricklayer fit for use on another board, a spadeful at a time: it must then be applied within half a minute, or it sets and is spoiled.

The average size of bricks in this country is a fraction under nine inches long, four and a half wide, and two and a half inches thick; and as their magnitude is limited by law, or rather by the duty imposed by law, the variation cannot be great. In consequence of this uniformity of size, a wall of this material is described as of so many bricks in thickness, or of the number of inches which result from the multiplying of nine inches by any number of bricks; a nine inch or one brick wall; a fourteen inch wall, or of one brick and a half ($13\frac{1}{2}$ inches would be more correct, in fact; for although a joint of mortar must occur in this thickness, yet the fraction under the given size of the brick is enough to form it); eighteen inch or two bricks, and so on. A half-brick wall is not, or ought not to be, known, except in partitions to fill in between quartering or upright timbers, when it is called brick-nogging; and then not more than six courses are laid without being bonded by a piece of wood, called an intertie, skew-nailed at each end to the quarters: brick-nogging is either flat or on edge, as the partition may be $4\frac{1}{2}$ or $2\frac{1}{2}$ inches thick.

The great art in bricklaying is to preserve and maintain a bond, to have every course perfectly horizontal, both longitudinally and transversely, and perfectly plumb; which last, however, may not mean upright, though that is the general acceptance of the term, for the plumb-rule may be made to suit any inclination that it is wished the wall may have, as inward against a bank, for instance, or in a tapering tower; and also to make the vertical joints recur perpendicularly over each other: this is vulgarly and technically called keeping the *perpends*. By bond in brick-work is intended that arrangement which shall make the bricks of every course cover the joints of those in the course below it, and so tend to make the whole mass or combination of bricks act as much together, or dependently one upon another, as possible. The object of this will be understood by reference to the diagram, fig. 1. Here it is evident, from the arrangement of the bricks, that any weight placed on *a* would (supposing, as we are obliged to suppose, that every brick feels equally, throughout its whole length, a stress laid on any part of it) be carried down and borne alike in every course from *b* to *c*; in the same manner the brick *d* is upborne by every brick in the line *e f*, and so throughout the structure. But this forms a longitudinal bond only, which cannot extend its influence beyond the width of the brick; and a wall of one brick and a half or two bricks thick, built in this manner, would, in effect, consist of three or four half-brick-thick walls, acting independently of each other, as shown in the plan at *i*, in the diagram, under fig. 1. If the bricks were turned so as to show their short sides or ends in front, instead of their long ones, certainly a compact wall of a whole brick in thickness would be produced; but the longitudinal bond would be shortened one-half, as at *g c h*, and a wall of any greater thickness, in the same manner, must be composed of so many independent one-brick walls, as at *k*, in the plan before referred to. To obviate this, to produce a transverse, and yet preserve a good longitudinal, bond,

the bricks are laid in alternate courses of headers and stretchers, or of ends and sides, as shown in fig. 2, thus combining the advantages of the two modes of arrangement *a b c* and *g c h* fig. 1, in *a b c* fig. 2. Each brick in fig. 2 showing its long side in front, or being a stretcher, will have another lying parallel to it, and on the same level, on the other side, to receive the other ends of the bricks showing as headers in front, which in their turn bind, by breaking the joint between them, as shown in the end of such a wall at *d*. Thus a well-bonded nine-inch or one brick wall is produced. The end elevations of the same wall at *e* and *f* show how the process of bonding is pursued in walls of one and a half and two bricks thick, the stretcher being abutted in the same course by a header; thus, in a fourteen-inch wall inverting the appearance on the opposite sides, as seen at *e*, and producing the same appearance in an eighteen-inch wall, as at *f*. In the diagram under fig. 2, at *g*, is the plan of a fourteen-inch wall, showing the headers on one side and the stretchers on the other, and at *h* is the plan of the course immediately above it, in which the headers and stretchers are inverted; at *k* and *i* are shown, in the same manner, the plans of two courses of an eighteen-inch wall. This is called English bond. Thicker walls are constructed in the same manner by the extension of the same principle.

But a brick being exactly half its length in breadth, it is impossible, commencing from a vertical end or angle, to make a bond with whole bricks, as the joints must of necessity fall one over the other. This difficulty is obviated by cutting a brick longitudinally into two, or transversely into four, equal parts, making half headers. One of these is placed next to a whole header, inward from the angle, and forms with it a three-quarter length between the stretchers above and below, thus making a regular overlap, which may then be preserved throughout: these half headers are technically termed closers. (See the joints in the heading courses next the upright angle of the wall fig. 2, and the first joints inwards from the square ends by the headers in the plans at *g* and *h*.) A three-quarter stretcher is obviously as available for this purpose as a half header, but the latter is preferred, because, by the use of it, uniformity of appearance is preserved, and whole bricks are retained on the quoins or angles. In walls of almost all thicknesses above nine inches, to preserve the transverse, and yet not destroy the longitudinal bond, it is frequently necessary to use half bricks; but it becomes a question whether more is not lost in the general firmness and consistence of the wall by that necessity, than is gained in the uniformity of the bond. It may certainly be taken as a general rule, that a brick should never be cut if it can be worked in whole, for a new joint is thereby created in a construction, the difficulty of which consists in obviating the debility arising from the constant recurrence of joints. Great attention should be paid to this, especially in the quoins of buildings, in which half bricks most readily occur; and there it is not only of consequence to have the greatest degree of consistence, but the quarter bricks used as closers are already admitted, and the weakness consequent on their admission would only be increased by the use of other bats, or fragments of bricks.

Another mode of bonding brick-work, which may be supposed to have arisen from the appearance of the ends of a wall according to the former mode of arrangement (see *e* and *f*, fig. 2), instead of placing the bricks in alternate courses of headers and stretchers, places headers and stretchers alternately in the same course, fig. 3. The plans below this at *c* and *d* are of two courses of a fourteen-inch wall, with their bond, showing in what manner the joints are broken in the wall horizontally as well as vertically on its face. This is called Flemish bond. Closers are used

Building. equally to English and Flemish bond, in the same manner, and for the same purpose; half bricks also will occur in both, but what has been said with reference to the use of them in the former applies even with more force to the latter, for they are more frequent in Flemish than in English, and its transverse tie is thereby rendered less strong. Their occurrence is a disadvantage which every care should be taken to obviate. The arrangement of the joints, however, in Flemish bond, presenting a neater appearance than that of English bond, it is generally preferred for external walls when their outer faces are not to be covered with stucco, or plaster composition of any kind; but English bond should have the preference when the greatest degree of strength and compactness is considered of the highest importance, because it affords, as we have already noticed, a better transverse tie than the other, and transverse tie is even more important than longitudinal.

It has been attempted to improve the bond in thick walls, by laying raking courses in the core between external stretching courses, and reversing the rake when the course recurs. This obviates whatever necessity may exist of using half bricks in the heading courses, but it leaves triangular interstices to be filled up with bats, as the diagram fig. 4 shows. This represents the plan of a thirty-six inch or three-brick wall with raking courses at *a*, between external ranges of stretchers, and lying on a complete course of headers, and at *b* a wall of the same thickness herring-boned; courses of headers would bed and cover this also, and, in the second course above, the raking or herring-boning would be repeated, but the direction of the bricks inverted. It will be seen that the latter demands, in addition to the triangular filling-in bats at the outer ends of the diagonally placed bricks, half bricks to fill up the central line of interstices, rendering herring-boning more objectionable in that particular, though it has some advantages over simply raking, or thorough diagonal courses, in some other points. Neither mode should, however, be resorted to for walls of a less thickness than three bricks, and that indeed is almost too thin to admit of any great advantage from it.

Skilful and ingenious workmen are well aware of the necessity of attending to the bond, and are ready both to suggest and to receive and practise an improvement; but generally the workmen themselves are both ignorant of its importance and careless in preserving it, even according to the common modes. Their work should therefore be strictly supervised as they proceed with it; for many of the failures which are constantly occurring may be referred to their ignorance or carelessness in this particular.

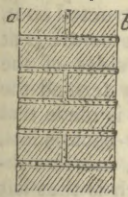
Not second in importance to bonding in brick-work is, that it be perfectly plumb, or vertical, and that every course be perfectly horizontal, or level, both longitudinally and transversely. The lowest course in the footings of a brick wall should be laid with the strictest attention to this latter particular; for the bricks being of equal thickness throughout, the slightest irregularity or incorrectness in that will be carried into the superimposing courses, and can only be rectified by using a greater or less quantity of mortar in one part or another, so that the wall will of course yield unequally to the superincumbent weight, as the work goes on, and perpetuate the infirmity. To save the trouble of keeping the plumb-rule and level constantly in his hands, and yet to insure correct work, the bricklayer, on clearing the footings of a wall, builds up six or eight courses at the external angles (see fig. 5), which he carefully plumbs and levels across, and from one to the other. These form a gauge for the intervening parts of the courses, a line being tightly strained from one end to the other, resting on the upper and outer angles of the gauge bricks of the next course to be laid, as at *a* and *b*, fig. 5, and with this

he makes his work range. If, however, the length be great, the line will of course sag; to prevent which, it is carefully set and propped at sufficient distances. Having carried up three or four courses to a level, with the guidance of the line, the work should be proved with the level and plumb rule, and particularly with the latter at the returns and reveals, as well as on the face: a smart tap with the end of the handle of the trowel will generally suffice to make a brick yield what little it may be out, while the work is so green, and not injure it. Good workmen, however, take a pride in showing how correctly their work will plumb without tapping. To work which is circular on the plan, both the level and the plumb-rule must be used, together with a gauge-mould or a ranging trammel, to every course, as it must be evident that the line cannot be applied to such in the manner just described. To every wall of more than one brick thick, two men should be employed at the same time, one outside and the other in: one man cannot do justice from one side, even to a fourteen-inch wall. Inferior workmen and apprentices are generally employed as inside men, though the work there is of quite as great importance as exteriorly, except for neatness, and for that only if the brickwork is to show on the outside.

In the operation of bricklaying, the workman holds the trowel in his right hand, and with the left he takes up the bricks from the scaffold, and lays them in their places. Spooning or shovelling up mortar from the board with the trowel, he throws it on the course last laid, and with the point strews it over the surface to form a bed for that which he is about to set; whatever bulges or projects over the outer edge of the work below is struck off, and being caught on the flat face of the trowel, is put against the side or edge of the last brick laid in the new course. Then taking up a brick, he presses it down in its place until its upper and outer angle comes exactly to the line; and if this be not readily effected by the hand, a slight drawing blow with the obtuse point of the edge of the trowel does it, or a tap with the end of the handle both draws it and settles it down farther than the hand can press it. The small quantity of mortar that is pressed out in front, by this operation, being struck off, the joints are neatly drawn by compressing the mortar with the point of the trowel, and thus producing a fine smooth surface,—that is, if the work is to be seen; for if it is to be plastered, the rough face is left that the plastering may the more readily attach itself, and the joint is not drawn at all, but the workman proceeds in the same manner with the next brick in advance along the course, or to fill in behind the one he has laid in front to meet the work of his mate on the other side of the same wall. This is the common mode of *laying* bricks. They should not however be merely *laid*; every brick should be rubbed and pressed down in such a manner as to force the slimy matter of the mortar into the pores of the bricks, and so produce absolute adhesion. Moreover, to make brick-work as good and perfect as it may be, every brick should be made damp, or even wet, before it is laid, otherwise it immediately absorbs the moisture of the mortar, and, its surface being covered with dry dust, and its pores full of air, no adhesion can take place; but if the brick be damp, and the mortar moist, the dust is enveloped in the cementitious matter of the mortar, which also enters the pores of the brick, so that when the water evaporates, their attachment is complete, the retention and access of air being thus altogether precluded. To wet the bricks before they were carried on to the scaffold would, by making them heavier, add materially to the labour of carrying: in dry weather they would, moreover, become dry again before they could be used; and for the bricklayer to wet every brick himself would be an unne-

Building. cessary waste of his time: boys might therefore be advantageously employed to dip the bricks on the scaffold, and supply them in a damp state to the bricklayer's hand. A watering pot with a fine rose to it should also be used to moisten the upper surface of the last laid course of bricks, preparatory to strewing the mortar over it. In bricklaying with quick setting cements these things are of even more importance; indeed, unless the bricks are quite wet to be set with cement, it will not attach itself to them at all.

As mortar is a more yielding material, used in brick-work merely for the purpose of making the detached portions of the staple adhere, by filling up their interstices and producing exhaustion, and the object being to produce as unyielding and consistent a mass as possible, as much of it should be used as is sufficient to produce the desired result, and no more. No two bricks should be allowed to touch, because of their inaptitude to adhere to each other; and no space between them should be left unoccupied by mortar which may produce adhesion. When the bricks are a fraction under two and a half inches thick, no four courses of bricks and mortar, or brick-work, should exceed eleven inches in height; and if they are fully that thickness, four courses should not reach eleven and a half inches. The result of thick beds of mortar between the bricks is, that the mortar is pressed out after the joint is drawn, on the outside, in front; and being made convex instead of slightly concave, the joints catch every drop of rain that may trickle down the face of the wall, and are thus saturated; the moisture freezes, and in thawing bursts the mortar, which crumbles away, and creates the necessity which is constantly recurring, of pointing the joints to preserve the



wall. The diagram shows the section of a nine-inch wall, with the joints on the side *a* as drawn, and on the side *b* as bulged, in consequence of the quantity of mortar in them yielding to the weight above. This, too, is in addition to the inconvenient settling, which is the consequence of using too much mortar in the beds.

In practice, bricklayers lay the mortar on the course last finished, and spread it over the surface with the trowel, without considering, or caring for it, that they have put no mortar between the bricks of that course, except in the external edges of the outside joints; that the mortar is not, or ought not to be, so thin as to fall into the joints by its own weight; and that unless they press it down, half the height of the space between the bricks remains in every case unoccupied, and the wall is consequently hollow, incompact, and necessarily imperfect. To obviate this, it is common to have thick walls grouted in every course; that is, mortar made liquid, and called grout, is poured on to, and spread over the surface of the work, that it may run in and fill up the joints completely. This, at the best, is but doing with grout what should be done with mortar; and the difference between the two consisting merely in the difference in the quantity of water they contain, mortar must be considered the best; for the tendency of grout is, by hydrostatic pressure, to burst the wall in which it is employed; and, moreover, it must, by taking a much longer time to dry and shrink than the mortar of the beds and external joints, make and keep the whole mass unstable, and tend to injure rather than benefit it. Filling or flushing up every course with mortar is therefore far preferable, and may be done with very little additional exertion on the part of the workmen.

It is a very common thing for two sorts of mortar to be used in the same wall, a finer and whiter for the outside, and a coarser for the inside work; the former made of cleaner and finer sand, and a greater quantity of lime, than

the latter, with the intention of exposing a better looking and more durable material to the view and the weather. The sand, we have already shown, ought to be as clean as it can be made for mortar under all circumstances; therefore there should be no possibility of making a difference in that particular; and the addition of a greater quantity of lime than is necessary to make good mortar makes it less durable, and occasions a sacrifice in an important quality for the sake of an unimportant advantage. Moreover, the mortar which contains the greater quantity of lime will yield or settle more than that which has the greater proportion of sand.

All the walls of a building that are to sustain the same floors and the same roof should be carried on simultaneously; under no circumstances should more be done in one part than can be reached from the same scaffold, until all the walls are brought up to the same height, and the ends of the part first built should be racked back, as at *a b*, fig. 2, and not carried up vertically with merely the toothing necessary for the bond, as at *a b*, fig. 3.

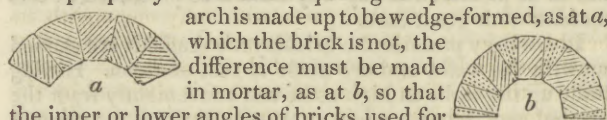
Brick-work should never be carried on in frosty weather, nor even when it is likely that frost will occur before the walls can be covered in and become so dry as not to be affected by frost. Covering an unfinished wall with a thick layer of straw, when frost may supervene, is a very useful precaution; on the straw, weather boarding should be laid, to prevent access of moisture from rain or snow. Merely wet weather may be guarded against by following the directions given above as to flushing every course of the work well up with mortar, so that no interstices be left into which water may insinuate itself, and by covering the walls with boards to act as a coping when the men are not actually at work on them; the joints in the face of a wall that is not to be plastered in any way should be protected in this manner with great care.

In ordinary practice the bricklayer's scaffolds are carried up with the walls, and are made to rest on them. Having built up the walls as high as he can conveniently from the ground, and from a scaffold on trestles perhaps, he plants a row of poles, which vary in height from thirty to forty and even fifty feet, parallel to and at a distance of about four feet six inches from the walls, and from twelve to fourteen feet apart. To these, which are called standards, are attached by means of ropes other poles called ledgers, horizontally and on the inside, with their upper surface on a level with the highest course of the wall yet laid; and on the ledgers and wall short transverse poles called putlocks or putlocks are laid as joists to carry the floor of scaffold boards. These putlocks are placed about six or seven feet apart, according to the length and strength of the scaffold boards; and the ends which rest on the walls are carefully laid on the middle of a stretcher, so as to occupy the place of a header brick, which is inserted when the scaffolds are struck after the work is finished. On the floor of the scaffold thus formed the bricklayer stands, and the materials are brought to him by labourers, in hods, from the ground below, or they are hoisted up in baskets and buckets by means of a pulley wheel and fall. The mortar is placed on ledged boards of about three feet square, placed at convenient distances along the scaffold; and the bricks are strewn on the scaffold between the mortar boards, leaving a clear way against the wall for the workmen to move along unobstructedly. The workman then recommences the operation of bricklaying, beginning at the extreme left of his course, and advancing to the right until he reaches the angle or quoin in that direction, or the place where his fellow-workman on the same side may have begun. Thus he goes on with course after course until the wall is as high as he can conveniently reach from that scaffold, when another ledger is tied to the poles, another row of putlocks laid, and the

Building.

Building. boards are removed up to the new level. The ledger and most of the putlocks, however, remain to give steadiness to the temporary structure, and so on to the full height of the wall, piecing out the poles by additional lengths as may be required. If a scaffold be very much exposed, and run to a great height, it must be braced. This is done by tying poles diagonally across on the outside to the standards and ledgers, and it may be further secured by tying the ends of some of the putlocks to the ledgers; but an outside scaffold should never be attached in any way to the building about which it stands. A scaffold should never be loaded heavily, as well on account of the work as of the scaffold itself; for the putlocks resting, as they do, on single bricks, in a green wall, they exert an injurious influence on it, which every additional pound weight on the scaffold must necessarily increase. A constant and steady supply of bricks and mortar on the part of the labourers, without overloading the scaffold at any one time, should be strictly required. It would indeed be an advantage if every scaffold were made with a double row of poles and ledgers, one being on the inside, within a few inches of the wall. This would obviate the necessity of resting the putlocks on the walls, and do away with putlock holes; but the inner row of poles would be constantly in the way of the bricklayer, who could not either set the bricks or draw the joints so well as if he were unobstructed. Access is given to scaffolds by ladders, and by inclined planes; the former are more commonly used externally, and the latter internally.

Arches in brick-work are plain, rough, cut, or gauged. Plain arches are built of uncut bricks, and the bricks being parallelopipedons, an arch built of them must be made out with mortar; that is, the difference between the outer and inner periphery of the arch requiring the parts of which an



arch is made up to be wedge-formed, as at *a*, which the brick is not, the difference must be made in mortar, as at *b*, so that the inner or lower angles of bricks used for this purpose should absolutely touch, and the mortar should be more consistent than that used in ordinary walling; nor should the centre on which an arch of this kind is set or built be struck or removed until the work is absolutely dry, or rather all such arches should be set in cement which will dry immediately. In consequence of this inherent defect in uncut-brick arches, in extensive continuous works, such as sewers, tunnels, vaults, &c. it is advisable to make them in thin independent rings of half-brick or one brick thick, as the case may be; that is, a nine-inch arch should be in two half-brick arches, as at *a*, fig. 6, and an eighteen-inch arch in two one-bricks, as at *b*, each arch in the latter case being bonded in itself as in a common nine-inch wall with headers and stretchers. It is evident that, by this mode of structure, a greater quantity of the solid material comes into the back or outer ring or arch than into the lower one; and if they had been bonded together into one arch, as at *c*, all that difference must have been made up with mortar. Moreover, whatever pressure comes on the outer ring is carried by it directly to the inner or lower, from whose joints, however, the mortar cannot escape or be pressed out, the inner angles of the bricks, by meeting, preventing it below, and the bricks themselves of the upper arch, which conveys the pressure, are themselves opposed to the back of the same joints, so that its power of resistance is made equal to that of the bricks themselves, except at the ends; which, in such works as we have supposed, are remote, and may be protected by the use of cement in their joints, whilst mortar is used in the rest.

Rough arches are those in which the bricks are roughly cut with an axe to a wedge form, and are used over open-

ings, such as doors and windows, when the work is to be plastered on the outside, or in plain back fronts, out-houses, garden-walls, &c. when, however, they are neatly pointed with what is called a tuck or tuck'd joint. Semi-circular and elliptical arches are generally made plain, or without cutting the bricks; but arches composed of a smaller segment of a circle (vulgarly and technically called *scheme* arches), if not gauged, are cut or axed. Very flat arches are technically distinguished from the quicker segment, or scheme, by the term *camber*, from the French word *cambrer*, to round like an arch. It is arches of this kind which are generally employed over windows and doors in external work, and they too are either cut or gauged.

Gauged arches are composed of bricks which are cut and rubbed to gauges and moulds, so as to form perfectly fitting parts, as in masonry. Gauging is equally applicable to arches and to walling, as it means no more than the bringing every brick exactly to a certain form, by cutting and rubbing, or grinding it to a certain gauge or measure, so that it will exactly fit into its place, as in the finer works of masonry. Gauged brick-work is set in a putty instead of common mortar, but it is seldom used except for arches in the fronts of houses, &c. which are to be neatly finished. These are for the most part straight, and are generally from eleven to twelve inches in depth, or the height of four courses of brick-work. Their value as arches will be best understood by reference to the diagram, fig. 7, by which it appears that all the material between the soffit of the straight arch or head of the opening *b c*, and the dotted line *b f c*, is useless, the intrados or soffit of the really efficient part of the arch being at that dotted line itself. This is the arc of an angle of 60° ; its chord, the width of the opening, being the base of an equilateral triangle constructed on it, and the joints are the radii of a circle whose centre is at *a*. *b d* and *c e*, the continuations of the sides of the triangle or radii *a b* and *a c*, are technically termed the skew-back of the arch. Sometimes the arc is made that of a more acute angle, in which case the skew-back is less, that is, the external angles *c b d*, and *b c e*, are less obtuse; a smaller unavailable portion of the arch is thus left between the arc and its chord, but that portion is less securely retained under the flatter segment, because the joints or radii diverge less, or are more nearly parallel. These gauged arches being, as they for the most part are, but a half brick in thickness, and not being tied by a bond to anything behind them—for indeed almost the whole, if not the whole, of their height, is occupied behind by the reveal and the wooden lintel—require to be executed with great care and nicety. It is a common fault with workmen to rub the bricks thinner behind than before, to insure a very fine joint in front, which must tend to make it bow outwards: it should rather be inverted, if it be done at all, though the best work is that in which the bricks are gauged to a perfect parallel in their lateral thickness. Fig. 8 is a transverse section of fig. 7, and the gauged arch, lintel, &c. in it showing the total disconnection of the gauged arch with any surrounding brick-work to which it might be bonded. The absurdity of constructing arches circular on the plan, especially in a thin unbonded shell of bricks, is so clear as hardly to require notice.

Gauged facing to a wall is exceedingly objectionable, unless the bricks used for the gauged work be originally a little larger than those which are to be worked in behind; whose size should be their gauge, otherwise no bond can be kept between the bulk of the wall and its face; and the same mortar or putty should be used throughout, of equal consistence, and with joints of equal thickness, or the work cannot be sound and compact.

Everything relating to the construction of niches, groins, domes, &c. may be referred to the articles ARCH, BRIDGE,

Building. and **STONE-MASONRY**; the difference between stone and brick, as far as the principle is concerned, being only in the comparative magnitude of the parts; for to make perfect arches, &c. it is clear that the bricks must be cut to the same forms that are required in stone.

It is generally held that nothing but its own components should be admitted into a brick wall, except what is absolutely necessary for its connection with the other parts of a building, such as wall-plates and wood-bricks (and that these should be avoided as much as possible), templates, lintels, &c. Wall-plates are required to receive the ends of the joists, and distribute the weight of the floor to which they belong equally along the walls. If the joists tailed singly on the naked bricks, their thin edges would crush those immediately under them, and the rest of the brick-work would escape immediate pressure altogether. Wall-plates may be superseded by the use of templates; but this involves the necessity of framed floors, which are carried by a few large beams, under whose ends stout pieces of timber three or four feet in length are placed. These are intended, like a wall-plate, to distribute the weight over a considerable part of the wall, and prevent the necessity of placing the beam on the naked friable bricks, and are called templates. Lintels are used over square-headed windows and doors, instead of arches in brick-work. They are useful to preserve the square form and receive the joiner's fittings, but they should always have discharging arches over them, and should not tail into the wall at either end more than a few inches, that the discharging arch be not wider than is absolutely necessary. If, however, discharging arches be not turned over them, the lintels should tail in at each end considerably, and have small templates or wood bricks placed transversely under them, as shown in the diagram, fig. 9. This indicates the elevation of the inside of part of an external wall with a window in it, and shows the lintel over the latter, with a discharging arch over it, and wood bricks under its ends, on the jambs of the opening. Discharging arches should be turned over the ends of beams, and templates also, as in fig. 10. They may generally be quadrants of a circle, or even flatter, and should be turned in two or more half bricks over doors and windows, and other wide openings, but over the ends of beams they need not be in more than one half brick.

Wood bricks are used to prevent the necessity of driving wedges into the joints of brick-work to nail the joiner's work to. They are pieces of timber generally cut to the size and shape of a brick, and worked in as bricks in the inner face of a wall, where it is known the joiners have occasion for something of the kind. This is principally in the jambs of the windows and doors for their fittings, and along the walls, at proper heights, for the skirtings or wainscoting, as the case may be.

The use of bond timber in brick walls is objectionable, because of its liability to shrink and swell, to decay, and to be consumed by fire, in any of which cases the structure to which it belongs is either injured, endangered, or absolutely destroyed. It is, however, valuable to tie the angles of walls, and to distribute the various weights equally throughout the walls, thus tending to prevent irregular settlements, whether arising from any defect in a foundation, or from an extraordinary imposition of weight in any particular part. The objections to bond timber depend on contingencies against which it may be in a great degree protected by care and judicious management. If the timber be of a durable sort, sound and well seasoned, neither shrinking nor swelling need be feared if it be not placed in a damp situation, or where moisture can gain access to it; nor will it decay if it be entirely incased in anything, to the total exclusion of the external atmosphere. If timber be laid in the heart of a wall, it should be well

Building. imbedded in, and flushed round and over with mortar, as we have shown that bricks should be for other reasons; and if it be laid in the face of a wall, it should be only where its exposed face can be effectually protected from access of moisture, as when it is covered by the plasterer. Damage by fire is a remote contingency; and as it may be confidently asserted that bond timber was never the part of a structure in which a fire commenced, except perhaps from some gross misplacement of it, it is moreover the last combustible part that a fire could reach, and therefore, when it is arrived at, almost all the damage that can be done has already accrued. Bond timber certainly may be, and constantly is, exposed to all the cited contingencies; but they generally arise from circumstances which it may be in a greater or less degree protected from. Flat wrought-iron bars have been recommended as ties in lieu of bond timber; but besides the equal liability of that metal to decay if it be exposed to damp or to a confined atmosphere, bars of it cannot be properly worked up or combined with brick-work; and its susceptibility of changes of temperature renders it far more unfit than timber to be compounded with materials whose greatest merits are firmness, and an inaptitude to change under any circumstances. The frangibility of cast iron makes it also exceedingly objectionable as a bond or tie in brick walls.

It will be generally found that a brick wall built with mortar and faced with ashlar has settled inward to a greater or less extent, as the work has been more or less carefully performed. Indeed in the nature of things it cannot be otherwise, unless the brick backing be worked in some cement which sets and hardens at once; for the outer face is composed of a layer of unyielding material, with few and very thin joints, which perhaps do not occupy a fiftieth part of its extent, while the back is built up of an infinity of small parts, with fully one eighth its height of joints, which are composed of material that must both yield to pressure and shrink in drying. Some part of the ill effect attendant on this is obviated by the bond-stones, which tail in or run through the wall, and tend to keep the discordant materials together; but still much of it remains: and besides this, the internal or cross walls, which have no stone in them, will either settle down and shrink away from the external walls, or drag them inward, as they happen to be well or ill bonded or tied. For these reasons, brick-work built in this manner with masonry should be executed with exceedingly well-tempered mortar, made with no more lime than is absolutely necessary to cement the particles of sand together, and the sand again to the bricks, worked as stiff as it can be, and laid in as thin courses as may be to answer the purpose required of it. Above all, work of this kind must not be hurried, but allowed time to dry and shrink as it goes on.

Discharging arches over vacuities having been disposed of incidentally, we have now only to speak of them under openings, in which situation their use is to distribute the superincumbent weight equally over the substructure, or along the foundation, as the case may be. For this purpose the arch is inverted, as shown in the diagram, fig. 14, and by means of it the weight brought down by the piers is carried along the footings, which are thus equally borne upon throughout their whole length. Arches of two half bricks are indicated here, that being sufficient for ordinary purposes, and to develope the principle; in large and heavy works, arches of three half bricks, and even greater, may be judged necessary. Any arc between a quadrant and a semicircle may be used with advantage; but an arc of less than 45° cannot be recommended for the inverted discharging arch under piers. If it should so happen that an old well or cess-pool, that cannot without great inconvenience and expense be filled up with

Building. sound walling, or in some other efficient manner, or other irretrievably bad place, occur in a foundation, and fall under a pier, the ground being sound on either side of it, a second discharging arch may be formed under the pier and over the unsound part, resting its legs on, or springing from, the inverted arch under the opening, and on the sound ground, as indicated by the dotted arch in the last quoted diagram, fig. 14.

Not the least important part of the bricklayer's art is the formation of chimney and other flues. Great tact is required in gathering over properly above the fire-place, so as to conduct the smoke into the smaller flue, which itself requires to be built with great care and precision, that it be not of various capacity in different parts, in one place contracted to a narrow strait, and in another more widely expanded, and so on. With the present imperfect means of cleaning chimney flues, it is absolutely necessary that they be of a certain magnitude, which should be carefully maintained throughout; but it would be better that they were made oval, or with the angles taken off at least, than parallelograms in plan, as the practice is. Chimney flues are plastered or pargetted with a mortar in which a certain proportion of cow-dung is mixed, which prevents it from cracking and peeling off with the heat to which it is exposed. Experiment has proved that a tapering and nearly cylindrical flue of much smaller bore than is now required is the best for carrying away smoke; and with a more humane and more efficient mode of cleaning, such a one would be unexceptionable. Of course, too, the bore should be regulated by the size of the fire-place, or rather by the quantity of smoke to which it is required to give vent.

Sewers and drains which are not cylindrical should be built with concave bottoms, although the sides be parallel and the covering horizontal. The concave channel keeps the stream more together, and enables it the better to carry its impurities along with it; whereas a flat-bottomed drain offers a large surface for the particles of soil to attach themselves to, and the stream of water, being more scattered, is less efficient in force. All drains in houses and in other places where it may be necessary to open them at any time, should be of the form of which *a*, fig. 11, is a section, with a flat covering of stone paving, or large, strong, paving tiles, set and jointed with cement. Gun-barrel drains, as at *b*, are the best in exposed situations, because they are the strongest; but as there is no mode of cleaning but by breaking them up, if they are too long to be raked, they should not be employed except with a considerable fall, and a frequent or constant stream of water through them, as from a pump-trough, rain-water trunks, &c. They are constructed on a barrelled centre, which the bricklayer drags on as he advances with his work, finishing as he goes. Large sewers, which are accessible from the ends by men to clear or remove any accidental obstructions, are best circular or elliptical; the latter of the two is generally preferred, because, in proportion to its capacity, its height is greater; but most frequently the sides of large sewers are made vertical and parallel, with a flat, inverted arch below, and a semicircular head, as at *c*. This form, however, it is evident, is disqualified to resist lateral pressure to any extent; nor indeed is the circular or elliptical sewer secure in its arched form, unless the weight above is sufficient to counteract any force the sides may be subjected to. No drain should have an inclination or fall of less than one quarter of an inch to a foot; and where the stream is infrequent and dull, as much more would be a great advantage. In building drains it is of great importance that proper traps should be constructed to prevent the return of smell and the passage of vermin. At every

sink there should be a bell-trap, and a well-trap within that, or near the hither end of the drain. Suppose a drain of the form of that shown at *a*, fig. 11, nine inches wide and nine inches deep, leading from a kitchen or scullery to the common sewer of the house, in which it meets that which comes from the water-closet and other places. The bell-trap in the sink itself will prevent the return of smell when it is constantly in use, but it is liable to be broken and otherwise injured by the ignorance and impatience of servants and others, or it may become dry by evaporation in some situations; it is therefore necessary to have a trap not so liable to contingencies. Let a well be made eighteen inches or two feet in diameter, square or round, and two feet six inches or three feet deep, across and below the level of the drain, as shown in the plan, fig. 12, and longitudinal section of the same, fig. 13; it must be built around with brick, in cement, and be plastered on the inside with the same material, which will make it capable of retaining fluids. Uprightly across this well, and in the transverse direction of the drain, must be placed a sound piece of paving stone, so long that its ends may be inserted in the sides of the well, as shown in fig. 12, and so wide that its upper edge shall touch the covering of the drain, and that its lower may reach six or nine inches down into the well below the bottom of the drain. Mortar or cement must prevent the passage of air between the upper edge of this trap-stone and the cover of the well and drain, and the trap is complete. The water coming from the sink flows along the drain from *a* to *b* (fig. 13), where it falls into the well, and filling it up to that level, it flows on again from *c* in the direction of *d*, to the cess-pool or common sewer, from which, however, no smell can return; for the trap-stone *e*, the lower half of which is thus immersed in water, completely bars the passage. It is evident, however, that if the well should leak, the water in it may fall below the lower edge of the stone, and the efficiency of the trap be destroyed; but if it be made perfect in the first instance, there can be no danger of any inconvenience that a bucket of water thrown in at the sink will not cure. It is from the drying up of the water in these well-traps (vulgarly called *sink-traps*) that uninhabited houses are so frequently offensive. It must be clear, moreover, that these traps form an effectual bar to vermin, and they may therefore be advantageously placed at the entrance of water-closet drains, to prevent rats from getting at the soil-pipes, which they will gnaw and destroy if they can get access to them. Internal drains, or those which go through a house, should always pass under the doorways if possible, and above the inverted arch, which should be always found under them, in external walls at least. If, however, circumstances should render it absolutely necessary to take a drain through a wall, an arched ring or bull's eye should be made for it to pass by.

Cess-pools should be made cylindrical, and be bricked round; but whether they are made to retain fluids or not, can seldom be a matter of consequence, as they are generally put in secluded places, where, if the object be not to get rid of the waste, there is seldom, at least, any desire to retain it. In towns and cities where the common sewerage is as complete as it should be, and water-closets are used instead of privies, cess-pools are unnecessary, as the soil becomes so much diluted by the water that goes down with it, that it flows readily enough through the private drains to the common sewer, and so on with the rest, to the common receptacle. Sometimes, indeed, it may be found necessary to clean out the well-traps, but this cannot often occur.

The construction of ovens and furnaces, and well-steen-ing, are certainly within the range of the bricklayer's art,

Building. but as they are not immediately connected with our present subject, they do not come within the scope of this article.

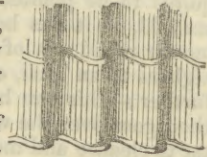
Brick and tile paving is performed by the bricklayer. Brick paving is either flat, or on edge, in sand, that is, with the bricks laid on their broadest surfaces, and bedded in and on dry sand, is very slight and fragile, and brick flat paving set and bedded in mortar is very little better; for if the soil on which the paving is laid be light and sandy, the bricks are easily displaced by being pressed unequally; and if it be clayey it will probably be moist, and the thin porous brick absorbing the moisture, will generally become saturated, and present a damp, unwholesome floor. Paving with bricks on their edges, however, forms a much better floor, and is preferable to a stone paving, if the latter be laid on the ground without the intervention of footings. Brick-on-edge paving in sand is generally used in beer cellars, pantries, dairies, stables, &c. as its numerous open joints allow wasted or discharged fluids readily to escape; and it is both cool and dry under ordinary circumstances. In mortar or cement, bricks on their edges form a sound, dry floor; the smallness of the surface exposed by each brick in this manner leaves them of course less susceptible of partial pressures, and the depth from the soil to the surface is such that damp rarely shows through. The paving brick differs from the common brick only in thickness, its dimension in that direction being rather less than two inches instead of two inches and a half, and in being rather harder and more compact. Dutch clinkers are paving bricks, smaller and much harder than the English; they are six inches long, three inches wide, and one inch and a half thick, and are always set on edge and herring-boned; that is, instead of being placed in parallel lines, they are set at right angles to each other thus,—with nevertheless a perfectly even face. Paving tiles are made nine inches and a half and eleven inches and a half square, though they are called ten inch and twelve inch or foot tiles respectively, the former being one inch, and the latter one inch and a half thick; they are set in courses, as stone paving would be. Paving tiles make a neater, but not so sound and durable a pavement, as brick on edge.



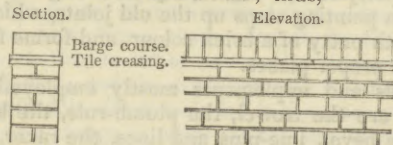
Tiling being much less in vogue than formerly, in consequence of the better appreciation of the superior qualities of slate for covering roofs, and the moderate cost at which slates are now furnished to the builder, it no longer maintains its separate artificer, but is performed, when it is required, by the bricklayer. It consists, for the most part, of two sorts—plain tiling and pan tiling. Plain tiles are simple parallelograms, generally about ten inches and a half in length, six inches wide, and five eighths of an inch thick; and each tile has a hole pierced through it near one end, to receive the wooden pin by which it is hooked on to the lath. The tiles are laid in mortar on the laths, which in this country are of oak or fir, with an overlap of six, seven, or eight inches. The greatest overlap or smallest gauge makes the securest work, though it does not present so good an appearance externally as a longer gauge does; and it requires, moreover, a greater number of tiles and laths, thereby adding materially both to the weight and the cost. The great overlap and the mortar are both necessary, nevertheless, to prevent the rain and snow from driving in between and under the tiles. Plain tiling requires the pitch of the roof to be at an angle of at least 50°, and is one of the heaviest coverings that can be used, though it is at the same time one of the warmest. The tiles, however, readily and rapidly absorb moisture, which they communicate to the laths and rafters under them, to

Building. the serious injury of both the latter; and the mortar in which they are set requires to be frequently pointed, the constant atmospheric changes to which it is exposed occasioning it to crumble and fall away in a very short time.

Pan tiles are parallelograms of irregular surface, straight in the direction of their length, which is thirteen inches and a half, but twisted to this form  in the transverse section. Measuring the whole surface across, a tile is nine inches wide, but in a right line from point to point not more than seven, and its thickness is half an inch; a small tongue or lip is bent down at one end, from its flatter convexity, on the under side, to hook it on to the lath by, instead of a wooden pin through it, as in a plain tile. Pan tiles are set dry or in mortar, on laths. They are not laid side by side, but overlapping laterally, thus; consequently all the overlap they have longitudinally is three or four inches only, or enough to prevent rain and snow from driving up under the upper, over the end of the lower tile; and thence pan tiling is but little more than half the weight of plain tiling. It is nevertheless a much less warm covering for houses, and is more liable to be injured by violent gales or gusts of wind, than the latter is; but again, it presents a far more pleasing appearance to the eye. Pan tiling will not bear a much flatter pitch than the other, but it is greatly improved by being pointed on the inside with lime and hair; sometimes indeed the whole of the work is, as we have said, set in mortar; but this mode has disadvantages to which pointing internally is not liable, and its superiority in other respects is questionable. To both pan and plain tiling there is a large concave tile used to cover the hips and ridges of a roof. These are not generally made to overlap each other in any situation, but are set in mortar, and fastened with nails and hooks fitted for the purpose.



When the top of a brick wall is not protected by a roof, it must be covered or coped in some manner, or it will soon be destroyed by the weather. Sometimes this is done by means of a course of bricks set across it on their edges in cement, and called a barge course, but it is a very imperfect covering, for water will trickle down the face of the wall on both sides, as the coping brick can be no longer than the thinnest wall is in thickness. Two double courses of plain tiles may be put side by side under the barge course, making a projection over either face of about one inch and a half; thus,—



This is much better than the barge course alone: but still the covering possesses no inclination outwards to throw the water off; the upper surfaces are all horizontal. The same objection exists to foot-paving tiles, which are also used as a coping; but none of these methods is available for any wall above nine inches in thickness. Stone coping, therefore, which may be made of sufficient width, and be both weathered and throated, is much to be preferred.

One of the greatest faults in the modern practice of building, both architecturally as a matter of taste, and practically as a matter of prudence, is, that these copings, and cornices which serve as such, do not project sufficiently to protect the face of the wall on which they may be placed, from the weather. A bold, massive, and well-projected cornice on a wall serves as a roof or pent-house to it, and, besides imparting great beauty to the plainest structure, protects the wall from the premature decay of

Building. its upper part especially, and of the joints generally, if it be unplastered brick-work, which thereby calls for the constant repetition of pointing. Effective and pleasing cornices and blocking courses may be formed with uncut bricks alone; and these, set in cement, would, with judicious management, add materially both to the appearance and durability of brick-work, without the foreign aid of the plasterer or mason.

From the injury which accrues to the joints of brick-work through bad management in its execution, and imperfect protection when executed, arises the necessity so frequent at the present day of pointing.

Sometimes frost will have supervened before the surfaces of the joints in a wall are dry; consequently the mortar bursts and peels away, and the whole then requires to be pointed. Preparatory to this operation the scaffold, if it has been struck, must be re-erected, the mortar raked out of the joints to a depth of about three eighths of an inch, or deeper if the injury have reached further;—this can be done by a labourer;—a brick-layer then goes over the whole with a hard hair-brush and water to cleanse and moisten the joints; and then, with mortar prepared for the purpose, he carefully fills them all up, and neatly draws them with his trowel. This mortar must be of the best quality; it is generally compounded with a certain proportion of forge ashes, which gives it a blue tinge, and greatly aids its power of resisting the action of the weather. Cement is sometimes used instead of this blue mortar. If the wall to be pointed be a front or other important one, in which peculiar neatness is required, every joint is marked with a narrow parallel ridge of a fine white putty, in the composition of which bone lime forms a principal ingredient. The former is called flat-joint, and the latter tuck-pointing. If it be an old wall that requires pointing, a scaffold must be erected before it; and where the putlocks cannot be rested on window sills and the like, half bricks are generally drawn from the wall to make rests for them, and restored again when the work is done. The former process is then gone through with a common wall; but if it require tuck-pointing, the whole surface is well washed, and then coloured, to look like new, before the pointing is done. The gauged arches over the windows and doors are always coloured, and the joints drawn with peculiar neatness. If in the original building of the wall the perpendics have not been preserved, that is, if the vertical joints have not been made to fall perpendicularly in the alternately recurring courses, the workman in pointing stops up the old joints, which are irregular, with putty of a brick colour, and forms false new ones in the proper places.

The tools and implements mostly employed by the bricklayer are the trowel, the plumb-rule, the level, the square, the bevel, line-pins and lines, the raker, and the hammer, together with a hod and spade for his labourer. Besides these there are sundry others used in cutting and gauging bricks, and some which are peculiar to tiling and paving; but the most material operations can be performed with those enumerated here. A pug-mill and screens for mixing and tempering mortar are also auxiliaries of great importance.

Brick-work is valued by the rod. A rod of brick-work is a quantity whose superficies is $272\frac{1}{2}$ feet (taken in practice at the round number 272 without the fraction), and thickness one brick and a half. Reckoning the one brick and a half at thirteen inches and a half,—its average extent,—the cubic foot is to the reduced superficial foot as eight to nine, so that a cubic rod of brick-work consists of 306 feet, the result of 272 multiplied by nine and divided by eight. The reduced superficial rod, however, is that commonly used in practice; and the process of measuring, to

ascertain the quantities and bring them to a standard, is Building.

The exact superficies of so much of a wall as may be of the same thickness is taken, and the number of bricks it is in thickness placed marginally; all the different portions or parts being of the same thickness are taken in like manner, and then deductions, as of window openings and doorways, are taken as such, in superficies, with their respective thicknesses placed marginally also. The dimensions, on being squared, are abstracted in half bricks, the deductions made of like thicknesses from like thicknesses, and the whole reduced by multiplying each quantity by the number of half bricks in the thickness of the parts of the wall which the margin expresses, and dividing the product by three (the number of half bricks in one brick and a half, the standard), the reduced quantity which results, divided again by 272, the number of feet in a rod, gives the quantity of rods and feet in the wall; as, for example,—The front wall of a house is thirty-five feet in length on the ground floor. (Fig. 14.) It has a basement story twelve feet high from the top of the footings to the level of the ground floor, and two and a half bricks thick, which is a half brick more than the wall above. The footings are three spreading courses high, each course a half brick thicker than the one above it. In the basement wall there are a door and two windows, the former seven feet by three feet six inches between the reveals, and the latter five feet by three feet nine inches between the reveals also. The measurement of thus much will show how all the rest must be done.

The footings consisting of three equally spreading courses, the extent of the middle one both in length and breadth will be an average of them all, so that they may be taken in one height. To the length of the ground floor, thirty-five feet, must be added twice three sets-off of one fourth of a brick at each end of the basement, and of the two first courses of footings for the length of the second of them; this is equal to three half bricks, or thirteen and a half inches, which, added to thirty-five feet, makes thirty-six feet one and a half inch the dimension of length for the footings, by nine inches, their height; their average thickness, to be placed in the margin, is three and a half bricks, the highest course being three bricks, the second three and a half, and the third or lowest four bricks. That is the first quantity. The next is of the wall above. The length (one half brick, for the two sets-off, added to thirty-five feet, gives) thirty-five feet four and a half inches, by the height twelve feet, two and a half bricks thick. The deductions are seven feet by three feet six inches in one brick for the door, between the reveals, and seven feet four and a half inches by four feet three inches in one and a half brick behind the reveals, the rest of the thickness of the wall, an addition of one half brick being made to the height, and of two half bricks to the width, because of the reveals. The windows are taken in exactly the same manner, with the same additions; but as the two are of the same size, their number

$3\frac{1}{2}$	$36\frac{1}{2}$	$\frac{1}{9}$	27	1	Footings.
$2\frac{1}{2}$	$35\frac{1}{2}$	$\frac{4}{12}$	424	6	Basement wall from the top of footings to the level of ground floor.
1	$\frac{7}{3}$	$\frac{0}{6}$	24	6	Deduct for door between the reveals.
$1\frac{1}{2}$	$\frac{7}{4}$	$\frac{4}{3}$	31	4	Do. behind the reveals.
$3\frac{1}{2}$	$\frac{5}{3}$	$\frac{0}{9}$	37	6	Do. for the windows between the reveals.
$1\frac{1}{2}$	$\frac{5}{4}$	$\frac{4}{6}$	48	$4\frac{1}{2}$	Do. behind the reveals.
Abstract of the above Quantities.					
$\frac{1}{2}$ brick.			Deductions in $\frac{1}{2}$ brick.		
189			40		
2122			94		
2312			75		
363			145		
3)1949			365		
272)649			8(2 rods 105 feet 8 inches.		
544					
105			8		

Building. is marked against the one dimension. The dimensions are now to be squared, and the squaring is done by duodecimals, or cross-multiplication. 36 feet $1\frac{1}{2}$ inches $\times$ 9 inches = 27 feet 1 inch; 35 feet $4\frac{1}{2}$ inches $\times$ 12 feet is = 424 feet 6 inches, and so on with the rest. An abstract is then made of these quantities in two columns, the first is marked "one half brick," and the second "deductions in that thickness." In the first column is placed the first quantity, multiplied by seven, the number of half bricks in three and a half, which stands marginally to it; 24 feet 6 inches $\times$ 7 = 189 feet 7 inches. The second dimension follows in the same column, multiplied by five, the number of half bricks in its thickness; the next quantity is a deduction, that is placed in the second column, multiplied by two, the thickness of the part deducted being one brick, and the rest in the same manner. The abstract being completed, the columns are added, and the amount of the second deducted from that of the first, and the difference divided by three, which brings it to the reduced standard. Dividing now by 272, the number of rods and feet in the given wall appears to be 2 rods, 185 feet, 8 inches. The quantities are more generally abstracted in one-brick and one and a half brick columns, with deductions in other parallel columns, to which thicknesses they are all readily brought. The single column in one half brick is, however, assumed here as the more simple and the more easily explained.

It must be remembered, that in taking the return or end walls, the thickness of that which has been already taken in front is to be deducted from their length, or the angle-pier or quoin will be taken twice. Work which is circular on the plan may be taken separately, and charged at a higher price altogether, or it may be measured as plain, and an extra taken at so much the superficial foot. Chimney breasts are taken as additional quantities, with the thicknesses they project, and the opening for the fireplace is deducted; but the flues are measured as solid, the extra labour and mortar in forming and pargetting them being fully equal in value to the bricks saved.

A rod of brick-work will consume about 4500 bricks, though the number will be a few more or less than this, as the bricks happen to be below or above the average size, and as the joints are made thicker or thinner. The quantity of mortar, it is evident, will be affected by the latter consideration also; but in London it is generally reckoned at from ninety to a hundred struck bushels, or from four to four and a half cart loads, each containing about one cubic yard, to the rod. The labour on a rod of brick-work may be taken on an average at the wages of a bricklayer, and his assistant or labourer, for four days; this, however, does not include making and beating the mortar, nor scaffolding, which latter must be separately considered. Many things will, however, affect the time in which the work may be performed, both of the bricklayer and his labourer; the former can do one fourth as much more, at the least, in walls which are to be plastered, as in those in which he has to keep the perpend and draw the joints, &c., and more in thick walls than in thin ones; and the capability of the latter will depend, inversely, on the rate at which the former can proceed, on the distance he may have to carry the bricks and mortar to the foot of the ladder, and mainly on the height he has to carry the materials up the ladder. In great heights, however, the materials should always be hoisted.

Gauged arches are taken at so much per foot superficial, in addition to being measured in as brick-work. Both the vertical and horizontal surfaces are measured to obtain the superficies of the arch, or rather of the work upon it. Rough arches are also taken as an extra superficial quantity; but plain arches in vaults, &c. and discharging

arches, are not considered extras, though an allowance is made for cutting to moulds, for inverted discharging arches, at per foot run.

If a wall be faced with bricks of a more costly sort than that of which the bulk is composed, or worked in a peculiar manner, it is calculated by the foot superficial, also in addition to its measurement as brick-work. It should be a matter of previous agreement whether or not there shall be an extra charge for plumbing quoins and reveals. Under ordinary circumstances no allowance is made for it; but oblique vertical angles, both internal and external, which require to have bricks neatly cut to form them, are taken at so much per foot running measure. External oblique angles are technically termed *squint-quoins*, and internal, *birds-mouth*. Oblique angles within a building are taken as run of cut splay. Cuttings to rakes or inclined straight lines are taken by the running foot also, but with reference to the thickness of the wall. Cuttings to ramps or concave lines are measured and valued in the same manner. Sailing or projecting courses, preparations for plaster cornices, and brick cornices themselves, are all taken at so much per foot run, according to the labour and materials involved in working them, over and above the regular charge for the brick-work by the rod.

Every thing, indeed, which adds to the labour of executing brick-work, and consumes more than the ordinary quantity of materials, is taken in addition, either by the foot superficial, or by the foot running, or in numbers, as the setting of chimney-pots, bedding and pointing door and sash-frames, &c. Bond-timbers, lintels, and wall-plates, are generally measured in with the brick-work, on account of the trouble of bedding them, and the delay generally occasioned to the bricklayer in setting them. If they are not included with the brick-work, bedding them is an extra charge, at so much per foot run; and then filling in between the ends of the joists and beams generally requires to be taken also.

Brick-nogging is measured by the superficial yard, including the quarterings and interties, and making no deductions but for openings. Drains and sewers are measured by the foot run, according to their form and capacity. The quantity of materials consumed, and labour required in constructing them, may be readily obtained by calculating the one, and observing the quantity a man with a labourer can execute under the circumstances, whatever they may be, within a given time.

Paving is measured by the superficial yard of nine feet; tiling by the square of one hundred feet;—eaves courses, ridges, and hips, being extra charges, by the foot run. Pointing, whether to old or new work, is measured by the superficial foot; and the scaffolding for it, when scaffolding is required, is either included in the price per foot for pointing, or a charge is made for the use of it, together with the cost of carting, and the men's time in setting up and removing it.

Mason.—We must refer to the separate article under the heads *STONE-MASONRY* and *STONE-CUTTING* for information on those subjects generally. It will, however, be necessary to give a few particulars here on masons' work, as it has to do with other artificers' works in the process of building, and especially with reference to various species of walling, or modes of constructing walls of stone.

From the regular and determined form of bricks, modes or systems for setting or arranging them may be formed, and any workman, by habit and an exertion of memory merely, may become competent to build a brick wall as well as it can be built; but it is not so with stone used in common masonry walling. The workman in this material has for the most part to do with masses of all forms and of all sizes, and a continual exercise of the judgment is

Building. required from him beyond the tact or skill which may be acquired by practice. For this reason workmen are generally less to be trusted to themselves, or to their own discretion, in stone than even in brick-laying or walling. The best or highest sort of stone walling is the easiest to set; it is that in which the stones are all tooled and gauged in regular parallelogramic figures, to range in courses and suit the thickness of the wall to which they are to belong; and the most difficult to execute properly is that in which amorphous stones are used,—the mason being allowed merely to dress them roughly with his hammer or axe, and fit them in as he best can to form the most compact mass: this is called rubble walling.

From the brittle nature of stone, great tact is required in setting, to prop or bear up the longer pieces in every part, or they will break across, and thus occasion more injury than could accrue if their whole mass had been made up of small pieces. Very long lengths, therefore, should be avoided, even in regular tooled courses, with which the bearing is or should be perfectly even, and a settling down of the work itself is hardly to be feared. There is a certain medium which may be preserved; and although the object is obviously, in stone as in brick walls, to form a compact mass, as unbroken into parts as possible, a mason will act more judiciously in breaking a long stone into two or more shorter ones, and working them in in that state, though he thus makes two or more additional joints, well knowing that he has the power of counteracting to a certain extent the ill effect of joints made by himself, but that those made by accident are irremediably injurious.

The observations made in the section of this article on bricklaying, on the use of mortar, will apply here also. Of whatever quality the stone may be of which a wall is to be built, it should consist as much of stone and as little of mortar as possible. If it be inferior in durability and power of resisting the action of the atmosphere, &c. to the mortar, besides the certain fact that the mortar will yield until it has set hard, and so far act injuriously, no ulterior good is gained; and if the stone be the more durable material, the more of it that enters into the wall the better. Indeed, in rough walling, if the stones be pressed together until the more prominent angles on their faces come into actual contact, the interstices being occupied by mortar, it will be better than if a thick yielding mass were allowed to remain between them. Absolute contact, however, should not be permitted, any more than in brick-work, lest the shrinking of the mortar in drying leave the stones to such unequal bearing as the prominent parts alone would afford. Stone being generally of a less absorbent nature than brick, it is not a matter of so much importance that it be wetted before setting; nevertheless, adhesion on the part of the mortar is more certain and more complete if the stones be worked in in at least a damp state. What bond is, and the necessity for it, have also been shown in the preceding section; and bond is of not less importance in stone walling than in bricklaying. We have also hinted above at the greater difficulty of understanding, forming, and preserving it in the former, and can now only add a few observations in addition that can be of any use, and these with reference to rubble walling particularly. Instead of carefully making the joints recur one over the other in alternate courses, as with bricks and gauged stones, the joints should as carefully be made to lock, so as to give the strength of two or three courses or layers between a joint in one course, and one that may occur vertically over it in another. In bonding through a wall, or transversely, it is much better that many stones should reach two thirds across, alternately from the opposite sides, than that there should be a few thorough stones, or stones extending the whole thickness of the wall. Indeed, one of

the many faults of stone-masons is that of making a wall consist of two scales or thin sides, with thorough stones now and then laid across to bind them together, the core being made up of mortar and small rubble merely. This is a mode of structure that should be carefully guarded against. There is no better test of a workman's tact and judgment in rubble walling than the building of a dry wall, or a wall without mortar, affords;—walls are frequently built with mortar that without it would have fallen down under their own weight in a height of six feet, in consequence of their defective construction;—thus rendering it evident that they are only held together by the tenacity of the mortar, which is very seldom an equivalent for a proper bond of stone. Masons are very apt to set thin broad stones on their narrow edges to show a good face, by which the wall is injured in two ways; it tends to the formation of a mere case on the surface of a wall, and it for the most part exposes the bed of the stone to the atmosphere, as a stone is more likely to be broad in the direction of its bed than across it.

Rubble walling is either coursed or uncoursed. In the latter sort, fig. 15, the work is carried on with stones of any sizes, as they may occur, and without reference to their heights, somewhat in the manner of the Cyclopæan walling of antiquity; the interstices of the larger being filled up with smaller stones. For this work the mason uses no tool but the trowel to lay on the mortar, the scabbling hammer to break off the most repulsive irregularities from the stones, and the plumb-rule to keep his work perpendicular. The line and level are equally unnecessary, as the work is independent of considerations which are affected by them. An attentive and intelligent workman will, however, make a sound wall with this species of construction, by fitting the stones well together and packing them with as little mortar as possible, yet filling every crevice with it, and carefully bonding through to secure compactness, transversely at the least.

In coursed rubble walling, fig. 16, the line and level are used, the work is laid in courses, each course being carefully brought up to the same level in itself, though no attention is paid to uniformity in the heights of the different courses. For this species of walling the stones are generally roughly dressed by the workman in the gross before he begins building. He is careful to get parallel beds to them, and he brings the best face of each stone to a tolerably even surface at right angles to the beds; the ends, too, receive some little attention, and for this purpose he uses an axe in addition to his scabbling hammer. The quoins in coursed rubble walling are generally built with peculiar neatness and precision, and they are set to serve as gauge courses for the rest. This, when well executed, makes a sound and excellent wall. It presents, however, rather a rough and homely appearance, and in finer works must be covered with stucco or cement, or faced with ashlar.

Ashlar is an external rind of gauged stones in equal courses, having tooled or closely-fitting joints to give a wall a neat and uniform appearance; it is axed, tooled, or rubbed, as may be thought most in character with the structure, or that part of it to which it is to belong. Ashlar stones, or ashlar as they are commonly called, are made of various sizes on the surface, as the character of the edifice may require or convenience demand, and vary in thickness from five to eight or nine inches. Some of the ashlar stones must, it is clear, be used transversely as bond stones, or the facing, having nothing to connect it with the wall behind, would soon totter and fall. Bond stones are generally put in alternate courses, with the backing to the jambs of openings, such as windows, and oftener, if these do not recur within a length of five or six

Building. feet; the bond stones themselves, too, should not fall in the same vertical chain, except when they are in the jambs of openings, but break in their alternate courses. Ashlar is commonly set in a fine mortar or in putty. It is generally recommended that ashlar should not be made regular parallelipedons, but run back irregularly to tooth in with the backing, the vertical joints being left open from about an inch within the face of the wall, and the upper surface or bed of the stones made narrower than, though perfectly parallel to, the lower. These things may exert a slightly beneficial influence under some circumstances; but the mode of construction involved is so radically bad, that unless the backing is set in a quick-setting cement, or be so well packed as to be proof against its general tendency to settle away from the ashlar facing, no means of the kind can materially improve it. A well-compacted wall of coursed rubble, the courses being frequently made up of whole stones and faced with ashlar, may be made tolerably sound and trust-worthy. Brick backing, with ashlar facing, cannot be considered as good, though it has the advantage of not requiring battening and lathing for inside plastering, as the stone-backed wall does. Uncoursed rubble with ashlar has all the disadvantages of both the preceding, with nothing to recommend it above either of them.

There are, besides, many sorts of walling or modes of structure arising from the nature of the materials furnished in various localities. That of most frequent occurrence, perhaps, is a manner in which either broken or rounded flints are used. These depend almost entirely on the mortar with which they are compacted, and on a coursed chain, which is commonly introduced at short intervals of larger stones or bricks, to act as a bond; the quoins, too, in this species of structure are generally constructed of dressed stones or brick.

Whatever objections lie against bond timber in brick-work apply with equal force at least to the use of it in stone walls; and it is of less importance generally as a tie in the latter than in the former, because a chain may be made by means of metal cramps and dovetails of wood or cast iron. A chain of this kind does not distribute pressure, however, as well as a chain of timber bond does, because of the liability of the material to fracture when it is borne upon unequally, and therefore may not be considered an equivalent for wall-plates or templates.

Discharging arches, it must be evident, are as necessary in and to stone walls as to walls of brick, and they may be treated much in the same manner.

Rubble walls are scaffolded with single, and ashlar fronted or other gauged stone walls with double fronted scaffolding, the former tailing one end of the putlocks in on the wall, and the other having an inner row of standard poles and ledgers parallel to the outer, making the scaffold entirely independent of the wall. In some places, however, it is the custom to dispense altogether with an external scaffold in building stone walls, particularly with gauged stones. With light and plain work this may be done without much inconvenience or retardation; but if the work be heavy or delicate, considerable delay and incorrectness result. Sometimes the finer work, such as that to mouldings, flutes, and foliate or other enrichments, is merely boasted or roughed out before the stones are set, and finished afterwards. This can be done well only from a secure floor or scaffold, on which the workman may move freely.

When walls are not entirely of masonry, in the ordinary course of economic building, stone is frequently used for copings, cornices, string and blocking courses, sills, landings, pavings, curbs, steps, stairs, hearth-stones and slabs, and chimney-pieces; to these may be added, quoins and

architectural decorations, or dressings for windows, doors, &c., though both the former and latter are not unfrequently executed in plaster composition, or cements. Copings (see Glossary to the article ARCHITECTURE) to cover walls, parapets, &c., are worked with a plain horizontal bed, two vertical faces, and an inclined or weathered back or upper surface; either forming an acute angle with the outer and wider, and an obtuse angle with the inner and narrower face, to throw the water off, as shown at *a*, fig. 19; or to both sides from the middle, as at *b*; the latter is technically termed saddle-back coping. In both cases they are made to project over the wall or parapet on both sides; and in the projected part of the bed under the edge or edges towards which the inclination is given, a channel or groove, called a throat, is cut, to intercept the water in its inclination to run inwards to the wall. On gables or other inclined planes the coping is neither weathered nor throated, as the water is necessarily impelled along its course to the lower end, and not over the sides. To protect the separate stones of a coping course from the danger of being displaced by high winds or other accidental cause, and to form a chain through its whole length, the stones are linked together by cramps of copper or iron let into their backs and run with lead. These metals, however, especially the iron, for the most part act very injuriously, from their exceeding susceptibility of atmospheric changes, and their greater or less tendency to oxidation; indeed, the stone invariably suffers more than the work benefits from the metal cramps. Tenons, dowels, joggles or dovetails of stone, or of hard wood or cast iron, applied so as to be protected from the weather, would be far better, and would answer every desirable purpose sufficiently. Cornices (*vide ut sup.*) are but ramified copings, and are or may be subjected to the same general laws. Care must be taken, however, in arranging them, that their centre of gravity be not brought too far forward, in the anxiety to project them sufficiently, lest they act injuriously on the wall by pressing unequally, and their own safety be also endangered. String courses (*vide ut sup.*) economically, in contradistinction to architecturally, are meant to protect a set-off in a wall, by projecting over its lower face in the manner of a coping (see fig. 17, at *c*); the beds are worked parallel, and the outer face vertical or at right angles to them, but so much of the upper surface is weathered or sloped off as protrudes from the upper part of the wall to carry the water off; and, for the reason above stated with regard to copings, the lower bed just within the outer face is throated. A stone string course, cramped or dove-tailed as above, forms an excellent chain round a brick wall; but the part of it in the wall should be of the exact thickness of one, two, or more courses of brick. A blocking course (*vide ut sup.*) is either a very thick string projecting over or flush with the face of the lower part of the wall, or it is a range of stone over a crowning cornice to bring the centre of gravity more in on the wall than it otherwise would be; in the former case it is treated exactly as a string, excepting that, if it be flush below, there is no occasion for a throat; and in the latter it has a horizontal bed, parallel vertical sides, and a weathered back or upper surface. Sills (*vide ut sup.*) are weathered and throated like the parts of a string course (see fig. 17, at *a* and *b*); they are laid across the feet or bases of window openings, &c. to receive the sash-frame, and carry the water off from the wall below; distinct sills in the same line may, indeed, be considered as an intercepted string course. In the ordinary practice of building, window sills are seldom set in brick-walls until they are absolutely required to set the sash-frames on; or they are set but not bedded, except at the ends. The object of this is to prevent any settlement that may occur in the piers

Building. from breaking the sills across on the unyielding part of the wall under the windows. A necessity for this, however, can only arise from bad construction; for with inverted arches under the openings, and a good bond in the brick-work, all would settle together, and the sills might be completely bedded across at once. Landings are platforms of stone, either over an area before a door, at the head of a flight of stairs, or as the floor of a balcony. They are made four, five, six, or eight inches in thickness, according to their extent and bearing; if not of one piece of stone, they are of nicely jointed pieces joggled and plugged together, and are worked on the face and edges just as their situation may demand. Stone pavings are of various kinds, and are prepared, shaped, and laid in various ways. Stone paving that is not exposed to the sun and air, if next the ground, should be laid on footings of brick or stone, or it will be constantly damp if the soil be close and clayey; but in yards, open areas, &c. it may be laid on the ground, bedded in sand, and jointed with mortar or cement. Stone paved floors are either on brick arches, or on a timber floor prepared for the purpose: the latter is a very bad mode of supporting paving, as the impression derived from the presence of the latter is, that the floor is incombustible; but if it be bedded on combustible material, the danger to human life in the event of fire is greater than if the stone paving did not exist at all. It is worked, cut, and set more or less expensively, according to circumstances. A curb is a range or course of thicker and stronger stone to bound a pavement, and is either flush with the paving, showing as a step on its outer edge, or raised above it to receive a balustrade, and shows on the outer side as a blocking course; in the latter situation it is generally joggled and plugged in the joints. The term step or steps alone is generally understood to mean external steps, whether arranged in long or short flights, or the single step in a doorway into which the door frame is tenoned. A step should have a plain horizontal bed, and a very slightly weathered tread or upper surface; the front or riser worked plain and vertical, or with a moulded nosing, and the back sunk with a joggle or bird's-mouth joint to receive the step or landing above or behind it. Stairs are but a flight or combination of steps used internally; the principles upon which they are constructed will be found under the heads **STONE-MASONRY** and **JOINERY**. Hearths are the stone flooring of fire-places; and a slab is that part of the floor of a room which lies immediately before the fire-place and along the extent of its front. This slab is supported by a flat brick arch called a brick trimmer, which is turned from the chimney-breast under the hearth on one side, to the trimmer joist on the other. (See a section of all these at fig. 18.) Chimney-pieces consist simply of mantel and jambs; that is, the vertical sides, and the architrave or transverse covering with its shelf or cornice. The parts of a chimney-piece are generally put together with an adhesive plaster or cement, and affixed to the wall or chimney-breast behind with cramps, hold-fasts, and plugs. The material of which chimney-pieces are composed varies from the coarsest stone to the finest marble; and the labour on them varies to a still greater extent. Quoin-stones are gauged and wrought blocks with parallel beds and vertical faces, placed on the angles of buildings with the intention of adding to their beauty and strength; they are used either with brick or stone walls, and are generally made to project before the face of that to which they are attached, mostly with a weathered angular joint, or with a rectangularly grooved or moulded one. The quoins are coursed with the rest of the wall if it be of stone, and are made to occupy the exact space of a limited number of courses of brick in a brick wall. (See fig. 17.)

Masonry to receive architectural decorations is generally worked into the walls as they are carried up; but as they are seldom homogeneous either in matter or construction, the result is mostly the converse of what it purports to be, for the work is more frequently weakened than strengthened by the decorative masonry. Stones of which columns are to be composed, whether each column is to be of one stone or more, are generally roughly boasted out before they are set, and are finished afterwards to traversing moulds and templets with a plumb-rule, whose sides are cut to the diminution, whatever it may be. Flutes are cut at the same time and in the same manner. The beds of the joints in columns should be worked with the greatest precision, that they may fit firmly and closely together; they must not, however, be worked hollow to make a close joint externally, or the arrises will chip off. It is considered a good plan to put a piece of thin milled lead between the beds, cut circular, and extending to within a short distance of the surface, and that the rest be filled with a fine adhesive putty, made as nearly of the colour of the stone as possible. This makes a solid bed, and protects the arrises effectually; but it will not do so well for slight columns, because it narrows the bed so materially. A joggle or dowel of hard wood or cast iron let into the core might be a sufficient counteraction, and it would certainly add to the stability of a polythitic shaft. The other parts of a columnar composition may be sufficiently cramped and joggled together with wood and metals, according to the situation, though it may be again remarked, that neither the one nor the other should be used, except where they can be protected from the access, even, of the atmosphere.

Stone walling is generally measured by the perch of twenty-one feet superficial, at a standard of eighteen inches in thickness, or a cubic quantity of thirty-one feet six inches. Sometimes it is taken by the rod of 272 feet, like brick-work, but at the eighteen inch standard instead of the fourteen inch, or a brick and a half, as in the latter species of walling. The perch, however, as first stated, is the standard of this country. The quantities may be ascertained in the same manner that they are in measuring brick-work, the number of inches the wall is in thickness being substituted in the margin for the number of brick lengths. In abstracting, the superficial quantities may be taken out in columns under the different thicknesses; the amount of each column being multiplied by the thickness in inches, and divided by eighteen, gives the reduced quantity; but if the work be taken in cubic quantities, it is evident that the three dimensions of every part multiplied together brings the whole at once to cubic feet, and no further process is necessary, unless it be required to bring the total quantity into reduced perches, which may be done by dividing it by thirty-one and a half.

The custom being different in different places with regard to the double measurement of quoins or angle piers, and as to whether openings, such as windows and doors, shall or shall not be deducted, because of the greater care and trouble required in setting and plumbing quoins and reveals, these particulars should be made matter of previous agreement. Perhaps the best way is to take the quantities exactly, and allow a running measurement extra on the parts requiring more than the usual quantity of labour, or, the nature of the work being of course obvious beforehand, the price per perch, per rod, or per foot cube, on the exact quantity, may be made to include the proposed extras. In the same manner, chisel-dressing (that is, facing the stones neatly and truly with the chisel), whether plain or sunk, may or may not be charged extra, according to agreement, or, in the absence of a previous agreement, to the custom of the place. To

Building. ascertain the value of stone walling, the cost of every thing that enters into some fixed quantity on the spot must be calculated, for almost every thing connected with it varies in almost every place. The original price of the stone at the quarry; the expense of carrying it from thence to the place where it is to be worked up; its texture or comparative hardness, which will materially affect the quantity of walling a mason may execute in a certain time; the cost on the spot, of lime and sand, and the height to which stones must be carried or hoisted from the ground; must all be ascertained and considered, as well as the wages of masons and labourers, and the sort of walling proposed to be executed.

Stone used in string and blocking courses, sills, copings, cornices, steps, quoins, columns, entablatures, &c. is measured by the foot cube, and the work on it is taken as plain, sunk, or moulded, by the foot superficial. The dimensions for the cubic quantities are taken on the unreduced block, or rather on the greatest breadth and thickness which the finished work exhibits; for instance, the string course, which appears in section at *c*, fig. 17, would be taken as of the thickness throughout which it holds in the wall; and in the same manner, the thickness of the sill at *b* would be taken under the wooden sill of the sash frame, which must have been the original thickness of the whole scantling. Stone sawed into thin slabs for paving, chimney pieces, &c. is taken by the superficial foot, at a certain thickness, the value being ascertained from the cubic quantity and the cost of sawing on the surface, whilst some articles, being of a fixed breadth and thickness fitting them to peculiar purposes, are taken by the running foot; but both these latter modes suppose labour included.

Plain work is the even surface produced on stone by the chisel, without the necessity of taking away more than the mere inequalities, and is equivalent to what the joiner calls trying-up, that is, making the surfaces perfectly straight both longitudinally and transversely, and so that it shall be quite out of winding, which indeed is a term to express the result of trying-up. Sunk work arises from the necessity of chiseling or hacking away below the level surface of the plain work, such as the weathering of copings, string courses, cornices, &c.; and mouldings cut in stone produce what is called moulded work. Sunk and moulded work are either straight or circular; circular plain work is certainly spoken of, but incorrectly, for every flexure in stone must be produced by sinking. The joints and beds, that is, the upper and lower horizontal sides, and the vertical ends of stones, are taken as plain work, as well as their faces and edges, if they have been wrought with the chisel to produce the surface; or their superficies are taken as sawing or half plain work, if the surfaces are as the saw left them. An extra charge is made on plain work for rubbing to produce a smooth unchannelled surface; and again, a higher charge is made for plain work if it be equally channelled or furrowed in vertical lines over the surface; this latter operation is technically termed tooling. Whenever any two surfaces meet in an oblique angle, one of them may be taken as sunk work, and it will generally be that which is not parallel to its opposite side. It is valued at about two sevenths more than plain work; and circular sunk work, that is, circular in the direction of its length, at about one sixth more than straight sunk. Moulded work is measured by girding the moulding or mouldings with a cord or tape, carrying it into all the quirks, and round all the arrises; the dimension thus given is multiplied by the length for the superficial quantity. This is valued at about one fifth more than sunk work, and circular moulded at about one half more than straight. Narrow jointings, groovings, throatings, joggings, &c. are taken by the

foot run. Mortises, holes, notches, cramps, dovetails, &c. are numbered and charged at so much a piece, according to the labour and cost involved in making them. The common pavings, landings, copings, sills, and steps generally used in London for ordinary purposes, are of a laminated stone from Yorkshire, and they are for the most part worked to size and shape in the quarry, so that there can be very little labour on them beyond the mere fitting and setting, making mortises, fitting coal-plates, traps, &c. when such are required, unless they be rubbed, which occasions, of course, an extra charge. York pavings and landings are taken by the superficial foot, at such a thickness; and copings, sills, steps, &c. by the foot run, according to their size.

Plasterer, &c.—No art in the economy of building contributes more to produce internal neatness and elegance, and no one is less absolutely important, as far as the use and stability of a structure are concerned, than that of the plasterer. Its very general application, too, is of comparatively late date; for wainscotted walls, and boarded or boarded and canvassed ceilings, or naked joists alone, are frequently found in houses of even less than a century old, both in this country and on the Continent.

The plasterer, as the term imports, works in plastic, adhesive compositions, which are laid on walls, both internally and externally, to stop crevices, reduce inequalities, and produce an even, delicate surface, capable of receiving any decoration that may be applied to it, either in colour or otherwise. These compositions are as various as the modes of applying them, the rudest being a compost of loam, a marly clay, and lime; this is used only for the commonest purposes, and being laid on in one coat, is washed over with a thin mixture of lime and water, which process is termed white-washing; the highest work of the plasterer is the making an imitation of marbles and other costly stones, of the purest calcined gypsum, mixed with a solution of gum and isinglass, and colouring matter to produce the required imitation. For the more common operations of plastering, however, comparatively few tools and few materials are required. The plasterer is attended by a labourer, who supplies his boards with mortar, and by a boy on the scaffold with him to feed his hawk; he is necessarily furnished with a lathing hammer, a laying-on trowel, a hawk, floats, brushes, jointing trowels and rules, moulds and straight edges, together with a screen, spade, rake, and hod, for his labourer, and a feeding-spade or server for his hawk-boy. The lathing hammer is chequered on the face with indented lines, to make it less liable to slip over the head of the nail; the upper or back part of the hammer is made like a hatchet, but very narrow, and on its inner side or edge there is sometimes a square nick or groove, by means of which the workman is enabled to draw a nail that has gone awry. The laying-on trowel is a thin plate of hardened iron or steel, ten inches long and two and a half inches wide, rounded at one end and square at the other end or heel; it is very slightly convex on the face; and to the back, about the middle of it, the spindle or handle is rivetted in at right angles, which, returning in the direction of the heel parallel to the tool, fits into a rounded wooden handle, by which the workman grasps it. The plasterer is obliged to keep this implement particularly clean and dry when he is not actually using it, lest it rust in the slightest degree, as it is clear that the brown oxide of iron would sadly discolour his finer work on touching it again with the trowel. The hawk is a piece of wood about ten inches square, to receive a small portion of mortar on, for the convenience of carrying it readily up to the wall or ceiling, to be there delivered and spread by the trowel. The hawk is traversed across the back by a dove-tailed piece,

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Building. into which the wooden handle is fixed at right angles, and by this the workman holds it in his left hand. A hand-float is a piece of board shaped something like a plastering trowel, with a ledge-handle to it, and is used to rub over the finished work, to produce a hard, smooth, and even face. A quirk-float is of wood also, and is angularly shaped to work in angles; and a derby is a long two-handed float, which is that principally used in forming the floated coat of lime and hair. The plasterer's brush is broad and thin, with a stout or slight row of coarse or fine hair, as it may be required for rough or fine work. Jointing trowels are thin plates of polished steel, of triangular shape, the point being a very acute angle; the handle is adapted to the heel or base of the tool. They are of three or four different sizes, and are principally used in making good cornices, and joining them at their internal and external angles, which is called mitering. Jointing rules are auxiliary to the jointing trowel. Moulds are pieces of hard wood cut to the contour of cornices or separate mouldings, to assist the workmen in forming them readily. For work of any importance the moulds are cut in copper plates, which are inserted in the wooden stock, and narrow pieces of wood are fixed to the moulds transversely, to guide and steady them along the screeds. A straight edge is a board of considerable length, shot perfectly straight on one edge, to bring the plastering on a wall or ceiling to a perfectly even surface, by traversing it in every direction. A screen is a large parallelogramic wooden frame, on which metal wires are fixed at regulated distances from each other, to act as a sieve. This is propped up in nearly a vertical direction by a counter-frame hinged to it like a common step ladder, and the coarser materials which enter into the composition of plastering mortar are thrown against its outer face, to separate the particles which are too large for the purpose from the finer. The sand and lime, too, are mixed much more efficiently and completely by screening them together than in any other manner. The spade and hod are like those of the bricklayer's labourer. The rake is used to separate the hair used in the mortar, and distribute it throughout the mass. The hawk boy's server is about the size and shape of a common garden hoe, but the handle is in the direction of the instrument. With it the boy rebats the mortar on the board, to destroy any set it may have taken, and delivers it in small pats or portions on to the plasterer's hawk.

The plasterer's materials are laths and lath nails, lime, sand, hair and plaster, of which are formed coarse stuff or lime and hair, fine stuff, gauge stuff, &c.; and besides these, a variety of stuccoes and cements, together with various ingredients to form colouring washes, &c. are more or less in request.

Laths are narrow strips of some straight grained wood (in this country they are generally of fir, though oak laths are sometimes used), in lengths of three and four feet, or to suit the distances at which the joists or quarterings are set, and in thickness a quarter and three eighths of an inch; those of the former thickness are called single, and those of the latter lath and a half. Lath nails are either wrought, cut, or cast, and of course vary in length to the thicker and thinner laths; cast nails are in common use in this country with fir laths. Coarse stuff is composed of ox or horse hair from the hide, in addition to the lime and sand mortar of the bricklayer and mason; this is intended to act as a sort of bond to net or tie it together, by being distributed throughout the whole mass, and in single hairs if it were possible. The hair should be as long as it can be procured, and free from grease and filth of every kind. Road drift is unfit to be used for mortar, unless it be completely cleansed from all animal and vegetable

matter, and of all mud and clay. Loamy or argillaceous earths are constantly used in the composition of this mortar, as its quality is thought unimportant, so that it can be made to hang together. The presence of clayey matter making the mortar unctuous and tenacious, they are used without or with very little hair; the consequence is, that the slightest injury affects the work made with them. The mortar thus composed readily absorbs and retains moisture, bursts, and crumbles away; and if it be effectually protected from injury of that kind, it becomes rotten in a comparatively short space of time, and frequently is the means of decay in the laths, and even in the larger timbers. Nothing but clean sharp sand should be used with the lime and hair in the composition of this, any more than of brick mortar. Fine stuff is a mortar made of fine white lime, exceedingly well slaked with water, or rather macerated in water to make the slaking complete; for some purposes a small quantity of hair is mixed up with this material. Fine stuff very carefully prepared of the finest powdered lime macerated so completely as to be held in solution by the water, thus forming a mere paste, which is then allowed to evaporate until it is of a sufficient consistence for working, is called putty. Gauge stuff is composed of about three fourths of putty and one fourth of calcined gypsum or plaster of Paris; this may be mixed only in small quantities at a time, as the plaster or gauge renders it liable to set very rapidly. Bastard stucco is made of two thirds fine stuff, without hair, and one third of very fine and perfectly clean sand (the cleanliness or purity of sand may be determined by the facility with which it may, when in a moist state, be struck off from the hand without leaving a soil); and common stucco is composed of about three fourths of clean sharp sand and one fourth of the best lime, well incorporated. This must be protected from the air from the time it is made until it is required to be laid on the walls. The cement best known and most commonly used in this country is called Parker's, or Parker's Roman cement. This material, when of good quality, with fine clean sharp sand, in the proportion of about three of the former to one of cement, and well executed, forms an admirable external coating for walls, and is generally preferable to any other with which we are acquainted.

The various coatings of plastering are thus designated: On laths, plastering in one coat simply is said to be laid, and in two coats, laid and set. In three-coat plastering on laths, however, the first is called the pricking up, the second is said to be floated, and the third set. On brick or stone walls, without the intervention of laths, plastering in one plain coat is termed rendering; with two coats, a wall is said to be rendered and set; and in three, rendered, floated, and set. Before the plasterer begins to lath a ceiling, he proves the under face of the joists, to which he has to work, by the application of a long straight edge, and makes out any slight inequalities in them, when the work is not to be of a very superior description, by nailing on laths or slips to bring them as nearly even as he can. When the inequalities are great, or if the work is to be of fine quality, he recurs to the carpenter, who takes off inordinate projections with his adze, and nails on properly dressed slips where the joists do not come down low enough, and thus brings the whole to a perfect level. This operation is called firing, that is, putting on pieces of fir, though it is vulgarly termed and frequently spelt *furring*. If it be a framed floor of ceiling joists the plasterer has to work to, it is tolerably sure to be straight; but the carpenter must have fired down on the beams or binders to the level of the ceiling joists, from end to end of them. When the ceiling joists are nailed to the beams or binders, however, nothing of this kind need be necessary. If a

ilding. ceiling is to be divided into compartments or panels, the projecting or depending portions must be bracketed or cradled down to receive the laths. It is an important point to be attended to in plastering on laths, and in ceilings particularly, that the laths should be attached to as small a surface of timber as possible, because the plastering is not supported or upborne by its adhesion or attachment to the wood, but by the keying of the mortar itself, which passes through between the laths, and bends round over them. If then the laths are in constantly recurring contact with thick joists and beams, the keying is as constantly intercepted, and the plastering in all such places depends entirely on the portions between them which are properly keyed. Under a single floor, therefore, in which the joists are necessarily thick, a narrow fillet should be nailed along the middle under the whole length of them all, to receive the laths and keep them at a sufficient distance from the timber, to allow the plastering to key under it; and thus too the surface might be made more perfectly even, by blocking out the fillets, and contrariwise, as it is in single floors that inequalities mostly occur. This being all arranged, the plasterer commences lathing. The laths should be previously sorted, reserving the crooked and knotty, if there be such, for inferior works, and selecting the best for the work of most importance, so that the workman shall find none to his hand that is not fit to be brought in. Taking a lath that will reach across three or four openings, he strikes a nail into it on one of the intermediate joists, at about three eighths of an inch from the one before it, and then secures the ends of that and the one that it meets of the last row with one nail, leaving the other end of the lath he has just set to be secured in the same manner with that which shall meet it of the next bay in continuation. It is of importance also that he pay attention to the bonding of his work, either by using longer and shorter laths in bays or squares, and in breaking the headings, or with laths of the same length, the first and last courses or bays only having the bond formed by half laths. In lathing on quartering partitions and battened walls, the bonding is not a matter of much importance; nor is the thickness of the timbers behind the latter of so much consequence as in a ceiling, because the toothing which the thickness of the lath itself affords to the plastering is enough to support it vertically; but, nevertheless, the more complete the keying, even in works of this kind, the better, as the toothing above will not protect it from any exciting cause to fall forwards, or away from the laths. The thinner or weaker sort of lath too is generally considered sufficiently strong for partitions, whilst the stronger is used for ceilings. Thin weak laths, if used in a ceiling, are sure to produce inequalities, by sagging with or yielding to the weight attached to them. A chance one or two weak ones in a ceiling of otherwise strong laths may be the ruin of the best piece of work. Care should be taken therefore not to allow a thin lath, or one of unequal thickness, to go on to a scaffold with thicker and more equable ones, lest the workman should, through carelessness or otherwise, put it up with the rest. When the lathing is completed, the work is either laid or pricked up, according as it is to be finished with one, two, or three coats. Laying is a tolerably thick coat of coarse stuff or lime and hair brought to a tolerably even surface with the trowel only; for this the mortar must be well tempered, and of moderate consistence,—thin or moist enough to pass readily through between the laths, and bend with its own weight over them, and at the same time stiff enough to leave no danger that it will fall apart, a contingency, however, that in practice frequently occurs in consequence of badly composed or badly tempered mortar, or bad workmanship, sufficient force not having been used with pro-

perly consistent mortar to force it through and form keys. If the work is to be of two coats, that is, laid and set, when the laying is sufficiently dry, it is roughly swept with a birch broom to roughen its surface, and then the set, a thin coat of fine stuff, is put on. This is done with the common trowel alone, or only assisted by a wetted hog's bristle brush, which the workman uses with his left hand to strike over the surface of the set, while he presses and smooths it with the trowel in his right. If the laid work should have become very dry, it must be slightly moistened before the set is put on, or the latter, in shrinking, will crack and fall away. This is generally done by sprinkling or throwing the water over the surface from the brush. For floated or three-coat work, the first, or pricking up, is roughly laid on the laths, the principal object being to make the keying complete, and form a layer of mortar on the laths to which the next coat may attach itself. It must, of course, be kept of tolerably equal thickness throughout, and should stand about one quarter or three eighths of an inch on the surface of the laths. When it is finished, and while the mortar is still quite moist, the plasterer scratches or scores it all over with the end of a lath in parallel lines from three to four inches apart. The scorings should be made as deep as possible without laying bare the laths; and the rougher their edges are the better, as the object is to produce a surface which the next coat will readily attach itself to. When the pricked up coat is so dry as not to yield to pressure in the slightest degree, preparations may be made for the floating. Ledges or margins of lime and hair, about six or eight inches in width, and extending across the whole breadth of a ceiling or height of a wall or partition, must be made in the angles or at the borders, and at distances of about four feet apart throughout the whole extent; these must be made perfectly straight with one another, and be proved in every way by the application of straight edges: technically these ledges are termed *screeds*. The screeds are gauges for the rest of the work; for when they are ready, and the mortar in them is a little set, the interspaces are filled up flush with them; and a derby float or long straight edge being made to traverse the screeds, all the stuff that projects beyond the line is struck off, and thus the whole is brought to a straight and perfectly even surface. To perfect the work, the screeds on ceilings should be levelled, and on walls and partitions plumbed. When the floating is sufficiently set and nearly dry, it is brushed with a birch broom as before described, and the third coat or set is put on. This for a fine ceiling that is to be whitened or coloured must be of putty; but if it is to be papered, ordinary fine stuff, with a little hair in it, will be better. Walls and partitions that are to be papered are also of this latter, or of rough stucco; but for paint the set must be of bastard stucco trowelled. This coat must be worked of exactly the same thickness throughout, to preserve to the external surface the advantage that has been obtained by floating. For all but this last mentioned, the set on floated work, the trowel and brush are considered sufficient to produce fine and even work; but trowelled stucco must moreover be hand-floated. In this operation the stucco is set with the trowel in the usual manner, and brought to an even surface with that tool to the extent of two or three yards. The workman then takes the hand-float in his right hand, and rubs it smartly over the surface, pressing gently to condense the material as much as possible. As he works the float he sprinkles the surface with water from the brush in his left hand, and eventually produces a texture as fine and smooth almost as that of polished marble. The process of plastering on the naked brick or stone wall differs but little, except in names, from

Building.

Building. that we have described as the mode on lath. The single coat, or equivalent for laying, on lath, is rendering, and it need differ only in the quantity of hair, which may be less than is necessary for laying, and in the consistence of the mortar, which may be made more plastic, to work easier, and because in a moister state it will attach itself more firmly to the wall: the wall, however, must itself be wetted before the rendering is applied. The set is the same, and is put on in the same manner as to two-coat work on lath. For three coat, or floated work, the first or rough rendering should be made to fill up completely whatever crevices there may be in the work behind it, and be incorporated with it as much as possible. As its name imports, its surface may, indeed should, be rough; but it is not scratched or lined as the similar coat on lath is: for this, too, the wall must be previously wetted, that the mortar may the better attach itself to it. For the floating, screeds must be formed as before described, and the consecutive process is exactly the same as on lath, both for the floated and for the set coat. In almost every case in which plastering is to be floated, the workman finds a guide for the feet of his wall screeds in the narrow grounds which the joiner has previously fixed for his skirtings; from these he plumbs upwards, and makes his work perfectly flush with them.

Mouldings and cornices, as large combinations of mouldings and flat surfaces are called, in the angles of rooms, immediately under their ceilings, are formed with running moulds, and are generally executed before the setting coat is put on the walls and ceiling. If the cornice do not project more than about an inch and a half, or two inches, from the ordinary work, a backing of lime and hair will be sufficient; and if any one part only happen to be more than ordinarily protuberant, a row of nails from six to twelve inches apart stuck into the wall or ceiling in the line of that part will give it sufficient support. But if the general mass of the cornice be more than that amounts to, and extend above six or eight inches along the ceiling, it must be bracketed out, and the bracketing lathed and pricked up, as for ordinary work. This pricking up, or other preparation, must of course be perfectly set before the cornice is run; and there should be one fourth of an inch at least of clear space between the preparation and the mould in the nearest part. A wooden screed or parallel straight edge is tacked with brads on to the wall, and another on the ceiling, if the cornice be large and heavy, as guides or gauges for the mould, whose rests are chased to fit them; and then one man laying on gauge stuff in an almost fluid state with an angular trowel, another works the mould backwards and forwards over it, which strikes off what is superfluous, and gives the inverse of its form to the rest. The mould is never taken down from the work at right angles to the line of it, but is drawn off at the end, so that none of the parts of the moulding or cornice is injured or torn by it, which must otherwise frequently be the case, from the peculiar forms at times given to the details. If a cornice be too large and heavy to be executed at once, it may be done in the same manner at two or more times, in so many parts; and if any part or parts of a moulding or cornice is to be enriched, the space for it is left vacant by the mould, and the enrichment is afterwards supplied. As a cornice cannot be completed up to the angles by the mould, it is worked by hand in those situations to a joint. The joinings are termed mitres, and in forming them the plasterer uses the jointing tools we have already described. Models for enrichments are made by the modeller, according to the design or drawing submitted to him, and from them the plasterer makes wax moulds, or, as in ordinary practice, the modeller supplies the moulds in which the

ornament is cast in plaster of Paris. If the ornament be in recurring lengths or parts, as is usually the case, only one length or part is modelled, and casts of as many as are required are taken from the mould; some single ornaments, again, which are very large, require to be moulded and cast in parts, which are put together by means of cement. When the cast ornaments are sufficiently dry the pieces are scraped and trimmed, the joints made clean and even, and they are set in the cornice with plaster of Paris, with white lead, or with a composition called iron cement, as the case may require. If the castings have something in the cornice to rest upon, the first will do; but if there is nothing to retain or attach them but the cement, one of the two latter must be used. Flowers and other ornaments in ceilings which are too large and heavy to be trusted to adhesive matter alone, must be screwed on to wooden cradling behind and above them.

In plastering a wall with common stucco, and its use is mostly for outside work, the first thing to be done is to remove the dust from it by brushing, and then wetting it very completely with water; if the wall to be stuccoed be an old one, or one of which the joints have been drawn, the mortar of the joints must be chipped or even raked out, and the bricks picked, to expose a new and porous surface to the plastering before brushing and wetting. The wall is then covered with stucco in a fluid state, applied with a broad and strong hog's bristle brush, like common white-washing. When this is nearly dry the stucco must be laid on as in common rendering, unless the work is to be floated, when the process is nearly similar to that in floated plastering. Screeds must be formed at the highest and lowest extremities of the wall, or of that part of the wall which is in the same vertical line, and is not intercepted by string courses, and be returned at the angles, putting the whole surface into a sort of frame. These must be made perfectly straight and plumb, so as to be quite out of winding, by the careful application of the plumb-rule and straight edge. Inner vertical screeds must then follow at three or four feet apart across the whole surface, and be made to range exactly with the outer ones, and then the interstices must be filled in as before. As the work is made good it must be well rubbed with the hand-float, as in the execution of trowelled stucco internally, to compress the material, and produce a hard, even, and glossy surface. Preparations for cornices and other projections from the straight surface of the work must have been previously made in or on the brick or stone-work, by the protrusion of bricks, tiles, or whatever may be best suited to form a core, and the mouldings and cornices are run with moulds, in the manner described for the same things internally, only that in work of this kind no plastic material but the stucco itself is used; that is, there is no preparation of any softer material than the stucco itself put under it. In running cornices in this material, workmen are very apt to mix a little plaster of Paris with the stucco to make it set under the mould, and thus give sharpness and fulness to the mouldings; but this should not be permitted; for the plaster is not qualified to stand the weather as the stucco is, and, if mixed with it, will produce premature decay. (For information concerning the various modes of preparing it, see the article *Stucco*). When the stucco is perfectly dry, it may be painted in oil colours, or be coloured in distemper; and in either case it is generally ruled over the surface with a lead point, to give it the appearance of gauged stone-work.

Rendering in Roman cement is executed almost exactly in the same manner as stucco rendering is, only that it is laid on the saturated wall directly, without the preliminary operation of roughing in, or washing the surface with a solution of the material. The same process,

Building. too, is followed in floating this cement, and with the same exceptions; and as, in addition to its superior hardness and capacity for duration, it is a quick-setting cement, it is far preferable to any of the common stuccoes for running cornices, mouldings, &c. Roman cement, or, as it is vulgarly called by most persons concerned in the operations of building, *compo*, a contraction of composition, may, like stucco, be painted in oil or coloured; but instead of a size colour, which is used for almost every other purpose in plastering, the colour for this composition is mixed with diluted sulphuric acid. This too may be lined and tinted to imitate stone and stone-work of any description.

It may not be amiss here to refer to the causes of the premature decay which takes place in stuccoes and cements when used externally as a coating to walls. The primary cause is the presence of muddy earth and decayed animal and vegetable matter in the sand used with the lime and cement. To this may be added frequent impurities in the limes and cements themselves, particularly of argillaceous matter in the former, and sometimes to the too great proportions of lime or cement to sand. These things might, however, remain quiescent for a long time, if the work were well protected from access of moisture, which is the grand exciting cause. The paint, or distemper wash, on the surface, is generally sufficient to prevent the rain which may beat against a vertical face from penetrating, especially if the work have been well hand-floated and trowelled, to make it close and compact; but the evil arises from exposure above, and from the numberless horizontal unfloated surfaces which are constantly presented. These receive and collect the water, and convey in streams over the vertical surfaces what is not immediately absorbed; and the work thus becoming saturated, frost seizes and bursts it, or warmth calls the vegetative powers of the impurities in it into action, and the whole is covered with a green sward. Let the sand of which a plaster composition is to be formed, whether with lime or cement, be washed until it no longer discolours clean water, and be well compounded with cementitious matter free from the impurities with which it is so frequently charged; let the work be well hand-floated and trowelled, particularly on the backs or upper horizontal surfaces of projections, and protected above by projecting eaves or otherwise; and the work, with common care and attention to paint or distemper at intervals, will last as long as any thing of the kind can be expected, or is found, to last anywhere.

A cheap and useful covering for external walls which are protected by projecting eaves, in plain buildings, is rough cast. This is executed in the following manner. The surface is first roughed in, or rendered with lime and hair; and when that is set dry, another coat of the same material is superadded, laid as evenly as it can be without floating, and as soon as a piece of two or three yards in extent is executed, the workman lays on it an almost fluid mixture of fine clean gravel and strong lime, which have been well mixed together. This is immediately washed with any ochreous colour that may be desired, and the whole dries into one compact mass.

In renovating and repairing plastering, the whole surface is first well washed to remove the dirt which may have attached itself, and as much of the earthy matter of the previous coat of whitening or colouring as will come away; any injuries the work may have received, such as cracks and fractures, are then repaired; and when the new stuff is quite dry, the joinings are scraped to produce an even surface, and the whole is again whitened or coloured once or twice, or oftener, as may be required, to make it bear out well. Stuccoed walls which have been painted must be well rubbed with pumice stone, to take

off the old paint as much as possible before they are newly painted. *Building.*

Plastering is measured in feet and inches, and valued by the yard superficial of nine square feet. It is taken under separate heads according to the nature and description of the work, such as, rendered; rendered and set; rendered, floated, and set; and with lath, for the lathing and plastering are valued together; lathed and laid; lathed, laid, and set; and lathed, plastered, floated, and set. Whitening and colouring are taken under separate heads, and the quantities of them are reduced to yards also. Work done in narrow slips, such as to the jambs and soffits of doorways and other openings, is measured by the foot superficial, and so are the backs of niches, niche-heads, &c. Arrises, or external angles and quirks, are taken extra by the running foot, and beads and other very small mouldings are measured in the same manner. Larger mouldings, however, and cornices, whether plain or enriched, are taken by the foot superficial, and the quantity is ascertained by multiplying the length, minus once the projection, by the girth, of the moulding or cornice, which is best determined by measuring its mould with a tape or cord. Enrichments are either numbered or taken at so much the running foot, making the modeller's an extra charge, if the design was original and required special modelling and moulding; and mitres are taken at so much a piece beyond a limited number. This number, in an ordinary room, is generally the four which necessarily occur in its four angles, making those which are usually occasioned by the projection of the chimney-breast extra; but it is not an uncommon practice to bring them within the limit, and count only all that may occur above eight, for no difference is made between internal and external angles. Circular work, whether it be convex or concave, of every kind, may be charged about one fourth higher than straight. Stuccoes and other compositions are also valued by the yard, and according to the description of the work, with almost similar exceptions to those mentioned with regard to common plastering. Used externally, however, all the arrises or external angles, throatings, grooves, chamfers, &c. are taken as extra by the running foot at such a width.

In the practice of measuring plasterer's work, it is customary to take the whole surface at first, and then whatever deductions there may be. Thus the side of a room is measured over all, from the upper edge of the skirting grounds up to the cornice. The windows and doors are deducted by taking to the outside of their framed grounds for the width, and from the skirting grounds up to the top of those of the door or window for the height. If there be more than one of each, or either of them, to deduct, of course the same dimension will serve for all, multiplied by as many times as each deduction occurs. A ceiling also is generally taken over the whole surface, from cornice to cornice, a chimney-breast or other projection being made a deduction. It is a moot point whether the plasterer should not be allowed that part of the ceiling and wall which is covered by the cornice, as he has actually finished the whole except setting. When the cornice is bracketed, however, he may fairly claim up to the brackets.

Scaffolding is not generally made an extra charge with new work; but with old work it is, if scaffolding be necessary; for, under ordinary circumstances, the plasterer is enabled to wash, stop, and whiten the ceilings and walls of rooms from trestles, with boards laid across them. In lofty saloons and halls, churches, &c. scaffolding is indispensable, and must then be charged. A scaffold is necessary, too, to a front that is to be plastered in any way; but it may be afterwards washed, repaired, and coloured, from a ladder, without the intervention of a scaffold.

Building.

Slater.—The principle on which slates are laid is that which is employed in plain tiling. To a roof with projecting eaves, a wide board is placed over the rafters' feet; but when the eaves tail into gutters, the gutter-board is made wide enough to receive the eaves-course. For light slating it is necessary to board a roof all over. This is done by the carpenter, and is called sound-boarding; but for strong heavy slates, fillets or battens are better; and these are laid by the slater himself, to suit the length of his slates. Three inches wide and one inch thick is a sufficient size for them, if the rafters be not more than twelve inches apart. Against gable or party-walls, a feather-edged board called a tilting fillet is laid to turn the water from the wall.

Before he begins to work on a roof, the slater shapes and trims the slates on the ground. With a large knife or chopper called a saixe, sax, or zax, he strikes off the unevennesses on one side of a slate, making it as nearly straight as he can; he then runs a gauge along it, marking the greatest width the slate will bear, and, cutting to that line, makes it perfectly parallel. He next, with a square, brings the thickest and best end to right angles with the sides, generally by chopping, but sometimes by sawing; and then marking upward from the squared foot or tail, makes two nail holes, where, by calculating the gauge the slate in hand will bear, he knows the fillet must come. All the slates being thus gauged to width, dressed, and sorted in lengths, they are then carried on to the roof by the labourers in rotation, beginning with the longest and largest for the lowest courses. The first course the slater lays is little more than half the length of that which is intended to cover it, and is necessary to break the joints at the eaves. This is called the doubling eaves-course; and the covering eaves-course is brought to the same foot-line, completely to cover it. Then to ascertain the gauge: From the length of the slate deduct the bond, which should never be less than two inches, and need not be more than three and a half inches, and the half of what remains will be the gauge. Thus, if the bond be fixed at three inches, and the slate is two feet three inches in length, the gauge will be one foot. This gauge or margin is set up from the foot of the eaves-course at each end, and a line strained to mark it along the whole length, and so on, to the ridge or top, where another half-course is required to complete the work, and that is in its turn secured by a covering of sheet lead. To a hipped roof care is taken to complete every course up to the angle, by cutting slates to fit its inclination; and these are also covered by an overlap of sheet lead. In nailing a slate, it must not be strained or bent in the slightest degree, or it will certainly fly in some sudden atmospheric change, to which it is of course constantly liable, even if it escape fracture, from being trodden on by the workmen themselves or by others. Copper, being less liable to oxidize from exposure to common causes than any other metal that will answer the purpose, is generally used for slate nails. Zinc is also used for the purpose; and iron tinned and painted nails are sometimes substituted by dishonesty on the part of the workman or builder, or bad economy on that of the proprietor. Slating should be well pointed on the inside, or torched, as the operation is sometimes termed, with lime and hair, to keep out the wind, and prevent snow from driving in, which it will do in an almost incredible manner if it be not thus hindered. Particular attention should be paid to this, as the neglect of it occasions more damaged ceilings than even broken slates, and more catarrhs than arise from broken panes of glass.

A very light and neat covering is produced, by laying wide slates side by side, and covering their joints with narrow slips bedded in putty, the overlap at the ends

being no more than the bond is with the usual mode. It is known as patent slating, and was introduced by the late Mr Wyatt, though he never obtained a patent for it. Indeed it is in principle the mode which was adopted in ancient Greece in covering the roofs of temples. Neither boards nor fillets are used, the slate bearing from rafter to rafter, and to the rafters the slates are screwed. The covering slips are also screwed, as well as bedded in putty. Slating of this kind may be laid at no greater elevation than ten degrees; whereas, for slating in the ordinary way, the angle should never be much less than twenty-five degrees, though large slates with a three and a half inch bond, carefully laid and well pointed, may perhaps be trusted at a rise of twenty degrees.

The mode above described of ascertaining the gauge or margin by the bond, is equally applicable to every sort of roof-covering that is made up of small inflexible parallelogramic slabs or tablets; and it should be borne in mind that the greater the angle is at which the rafters rise, or, in technical language, the higher the pitch of the roof, the less the bond may be, and *vice versa*. With slabs or tablets that vary in length, too, as slates generally do in this country as they are brought to market, it is the bond which it is of importance to observe; but if they are of an invariable length, as tiles are, it is sufficient that the gauge or margin be attended to.

The best slate this country produces is from the quarries of Bangor in Caernarvonshire, and of Kendal in Westmoreland. Good slate is also procured in the neighbourhood of Tavistock in Devonshire, and in some parts of Scotland. The scantlings of slate are cut in the quarries to set sizes, and these are split into tablets, thicker or thinner according to the size of the slab and the capacity of the slate, for the inferior qualities are neither so compact in material, nor so clearly laminated or schistose, as the superior, and will not therefore rend so freely. The sizes of slates best known in the British market are distinguished by the names of ladies, countesses, duchesses, and queens. Ladies measure fifteen inches by eight, countesses twenty inches by ten, duchesses twenty-four inches by twelve, and queens thirty-six inches by twenty-four; and they are esteemed in proportion to their magnitude. Besides these, there is a slate which equals the queen in extent of surface, but is of very much greater thickness; this is called Welsh rag. A smaller slate, again, which is less indeed than the lady, and is cut from the refuse of large scantlings, is called a double. In size it does not often exceed twelve inches by six. Westmoreland slates are thick and heavy like the Welsh rag, but do not generally run so large.

The best slate is of a bluish-grey colour, and breaks before the zax like well-burnt pottery, and will ring in the same manner on being struck. Whitish or light grey-coloured slate is for the most part stony: dark blue or blackish slate, on the other hand, cuts very freely; but it absorbs moisture, and decays rapidly.

Slater's work is measured by the square of a hundred superficial feet. In a parallelogramic piece of slating, as in a gabled roof with projecting eaves, the length along the eaves by the breadth or height from that to the ridge, with the addition to the latter dimension of the gauge or margin for doubling the eaves, will give the quantity of one side. Projections for chimney-shafts or breasts, skylights, &c. must be deducted; but an addition must be made of the run round them by six inches, for cutting and waste. In a hipped roof the length from point to point of the eaves on one of the long sides of a quadrilateral roof, by the breadth or height, with the addition as before, will give that side and half of each of the ends. The other side will, of course, in the same manner, include

Building. the other halves of the ends. The length of the hips taken as a superficial dimension in feet, or by twelve inches, is added for cutting and waste, and valleys are taken and added in the same manner when they occur.

Carpenter.—For the scientific principles of carpentry we must refer the reader to the article under that head, and to the articles ROOF, STRENGTH OF MATERIALS, and TIMBER. Here we have merely to speak of the practical details of carpenters' work in the operations of building,—indeed, of *carpentering*, or the practice of carpentry, considering it as a mechanical art.

The carpenter works in wood, which he receives from the sawyer in beams, scantlings, and planks, or boards, which he cuts and combines into bond-timbers, wall-plates, floors, and roofs. He is distinguished from the joiner by his operations being directed to the mere carcass of a building,—to things which have reference to structure only. Almost every thing the carpenter does in and to an edifice is absolutely necessary to its stability and efficiency, whereas the joiner does not begin his operations until the carcass is complete; and every article of joiners' work might at any time be removed from a building without undermining it or affecting its most important qualities. Certainly, in the practice of building, a few things do occur which it is difficult to determine to whose immediate province they belong; but the distinction is nevertheless sufficiently broad for general purposes. The carpenter, with the bricklayer or mason, and some of the minor artificers, constructs the frame or hull; and the joiner, with the plasterer and others, decorates and rigs the vessel: on the former the actual existence of the ship depends, and on the latter depends her fitness for use.

The carpenter frames or combines separate pieces of timber by scarfing, notching, cogging, tenoning, pinning, and wedging; and the tools he uses are the rule, the axe, the adze, the saw, the mallet, hammers, chisels, gouges, augers, hook-pins, a square, a bevel, a pair of compasses, and a gauge, together with the level and plumb-rule; besides these, planes, gimlets, pincers, a sledge hammer, a maul or beetle, wedges, and a crow-bar, may be considered useful auxiliaries, though they are not absolutely necessary to the performance of works of carpentry.

To scarf is to cut away equally from the ends, but on the opposite sides, of two pieces of timber, for the purpose of tying or connecting them lengthwise. This is done to wall-plates and bond-timber, and especially to beams when they are required of greater length than can be procured without joining. (See CARPENTRY.) The usual mode of scarfing bond and wall-plates is by cutting about three fifths through each piece on the upper face of the one and the under face of the other, about six or eight inches from the end, transversely, making what is technically termed a *calf* or *kerf*, and longitudinally from the end, from two fifths down on the same side, so that the pieces lap together with a sort of half dovetail. The heavy supervening weight of the wall and joists renders it impossible that they should be drawn apart without tearing the fibres asunder or lifting the weight. (See fig. 20.) Nevertheless these joints are generally spiked, and it is always required that they be made to fall in or under a pier. Notching is either square or dovetailed: it is used in connecting the ends of wall-plates and bond-timber at the angles, in letting joists down on beams or binders, purlines on principal rafters, &c. Nos. 1, 2, 3, 4, and 5, fig. 21, show varieties of notches applied as we have described. No. 1 is a simple square notch or halving of the ends of bond-timbers or wall-plates at a right angle; No. 2, a dovetailed notch. No. 3, the notch most commonly used: it is similar to No. 1, but that the ends are allowed to run on so that the one piece grasps the other, and each

Building. forms a cog to the other. No. 4 is an oblique-angled, dovetailed notch; and No. 5 shows how joints are notched or let down on beams and binders, and purlines on principal rafters. A notch is cut into the under edge of the joist or purline an inch or an inch and a half in depth, and considerably shorter than the beam, binder, or rafter is in thickness. Notches are also cut down on the upper angles of the bearing pieces as long as the rider is thick, as deep as the notch before described of the latter is, and so far in as to leave a thickness on its own edge equal to the length of the notch in the riding joist or purline. In the diagram one joint is indicated in its place let down in the notch, and another indicates the notch in its own edge, and leaves exposed the notches in the binder. Cogging, or cocking as it is vulgarly termed, is the last-mentioned species of notch extended on one side, and leaving a narrow tooth or cog alone in the bearing-piece flush with its upper face, No. 1, fig. 22. It is used principally in tailing joists and beams on wall and ten-plates, and the cog is here made narrower, because the end of the joist or rider coming immediately beyond the plate, that part which forms the shoulder of the notch would be liable, on being strained, to be chipped off or torn away, if it were not kept as long as possible; and it is not of so much importance to guard against weakening a wall-plate which is supported along its whole length, as a beam, binder, or principal rafter, which rests on distant points alone. No. 2 of the same diagram shows another mode of tailing on joists and beams by a dovetail notch, which, to distinguish it from the flat notches, Nos. 2 and 4, fig. 21, is called cocking, or cogging also, though the operation decidedly is not cogging. This is a good mode if the timber be so well seasoned as not to be likely to shrink more; but it would be improved by allowing the rider to take a bearing in a notch like that to No. 1 before the dovetail commenced, as at No. 3, for in the ordinary mode it is weakened in a point of great importance.

Tenoning implies mortising also, as a matter of course. They are the names of the two operations necessary to one result,—that of producing a connection between two pieces by inserting part of the end of one into a hole of similar size cut in the side or edge of the other. A tenon is formed by cutting in on each side or edge of a piece of timber, near its end, transversely, to a certain depth, or rather, leaving a certain part of the breadth or depth uncut, and then cutting in longitudinally from the ends as far from each edge as the transverse cuts have been made in depth, thus removing two square prisms and leaving a third undivided. This is the tenon. An excavation in the side of a piece of timber, of a certain depth, in the direction of its thickness, parallel to its edges, and bounded lengthwise by lines at right angles to them, is a mortise. Tenons and mortises are made of exactly corresponding size, and are most frequently at equal distances from one or the other side or edge of the two pieces to be conjoined; and for the most part, too, every angle formed in the process of tenoning, both internal and external, is a right angle. Tenons are called joggles in some situations, when they are not intended to be borne upon; and their use is merely to keep the piece of timber to which they belong steadily in its place, without being liable to slight accidents from lateral pressure or violence. In combining timbers by means of mortises and tenons, to produce as great a degree of strength as possible, it must be obvious that the object to be kept in view is to maintain the end or tenon of the one as large and efficient as it may be, and weaken the other as little as possible in forming the mortise. For the efficiency of the mortised piece in a horizontal bearing, it is clear that as much of its thickness should be below the mortise as possible, as at *a*, fig. 23; for if it be put low, as at *b*, the superincumbent weight on

Building. the tenon would more readily split or rend it in the direction of the grain, as indicated; but the case is inverted with the tenoned pieces. With the mortise at *a* the tenon could only have the efficacy of so much of the piece to which it belongs as there is of it above its under surface, which is a very small part of its depth; whereas with the tenon at *b* it would command the power of the greatest part of the piece. To guard as much as possible against the danger of too great a mortise and too small a tenon on one side and the other, and to obviate the difficulty arising from the efficiency of one or the other of the two pieces being affected by putting the tenon too high or too low, a compound, called a tusk tenon, is used for almost all horizontal bearings of any importance, especially to joists and binders, to trimmers, beams, girders, brestsummers, &c. The body of the tenon in this is a little above the middle of the end, and it runs out two, three, or four inches, or more, as the case may require. Below it the tusk protrudes, and above it the shoulder is cut down at an obtuse angle with the horizontal line, giving the strength of the whole depth of the timber above the under tusk to the tenon, and giving it a bearing in a shallow mortise, whilst a greater depth of the mortised piece than the tusk rests on receives the body of the tenon, and so protects its comparatively narrow margin from undue pressure. The diagram No. 1, fig. 24, shows the tusk tenon, with the section of a beam into which it is mortised; and No. 2 indicates perspectively the appearance of the mortise in front. See also CARPENTRY.

Pinning is the insertion of nearly cylindrical pieces of wood or iron through a tenon, to detain it in the mortise, or prevent it from being drawn out by any ordinary force. For this purpose the pin is inserted either in the body, or beyond the thickness, of the mortised piece, as indicated at *a*, fig. 24, or at *a*, fig. 25. Wedging (see *bb*, No. 2, fig. 25) is the insertion of triangular prisms, whose converging sides are under an extremely acute angle, into or by the end of a tenon, to make it fill the mortise so completely, or bind it so tightly, that it cannot be easily withdrawn. The wedging of tenons also assists in restoring to the mortised piece of timber much of the strength it had lost by the excision of so much of its mass, which indeed the tenon itself does if it fit closely in every direction; but the assistance of the wedge renders the restoration more perfect than the tenon could be made to do of itself, by compressing the fibres of both, longitudinally to those of the one, and transversely to those of the other, thus removing the tendency of the mortised piece to yield in any degree in the weakened part, though it cannot make up the loss in its tenacity occasioned by the section of its fibres.

In scarfing, cogging, and notching, the shoulders are always cut in with the saw; but the cheek is for the most part struck out with the mallet and chisel, or adze, as may be most convenient. Tenons should be made entirely with the saw: mortises are generally bored at the ends with an auger whose diameter equals their thickness; the intervening part is taken out with a wide chisel, cutting in the direction of the fibre; and the ends are squared down with a chisel whose breadth just equals the thickness of the mortise. Wood pins must be rent to insure the equal tenacity of their whole mass. Wedges are cut with the saw, but straight grained stuff is always preferred for them.

Bond-timbers and wall-plates should be carefully notched together at every angle and return, and scarfed at every longitudinal joint. The scarf shown at fig. 20 is sufficient for the purpose; and the notch at No. 3, fig. 21, may be preferred where notching is required; neither pinning nor nailing, however, can be of great use to either the notch or the scarf. Bond-timbers are passed along and through all openings, and are not cut out until such open-

ings are to be permanently occupied, that is, windows with their sash-frames, &c. because they assist in preventing irregular settlements, by helping to carry the weight of a heavy part along the substruction generally, instead of allowing it to press unduly upon the part immediately under it.

Whatever notches and cogs for beams and joists are required in wall and tem-plates, should be made before they are set on or in a wall; for, as they are always bedded in mortar, any thing that may break the set must be avoided.

It is incumbent on the carpenter to supply the brick-layer or mason with wood bricks in sufficient quantity, and to direct him where they should be placed to receive the joiner's fittings, or the battening, which the carpenter himself may have to put up for the plasterer.

The framed quartering partitions which may be required should be set up in every story before the beams and joists of the floors are laid, that their horizontal timbers may be notched on to the wall-plates, and that the joists or binders may be notched on to them if occasion require it; but they should be fixed rather below than above the level of the wall-plates, because they are not liable to settle down so much as the walls, though even that will depend in a great degree on the nature of the walling, and its liability to yield.

The carpenter makes and fixes or sets centres of all kinds, whether for single arches, vaults, or drains. The striking out of the centres, in the first instance, is necessarily contingent on the arches to be turned on them, for the forms of which the carpenter must look to the brick-layer or mason, whose instructions for describing arches will be found under the head **STONE-MASONRY**. Large centres are framed in distinct ribs, and are connected by horizontal ties; whilst small ones are made of mere boards cut to the required sweep, nailed together, and connected by battens notched into or nailed on their edges. Precision and stability are nevertheless equally and absolutely necessary, as it is impossible for an arch to be turned or set correctly on an incorrect or unstable centre.

The timbers or frame-work of floors is called naked flooring, and it is distinguished as single, double, and framed. Of these the first, under ordinary circumstances, is the strongest. Single flooring (see No. 1 and 2, fig. 29) consists of one row or tier of joists alone, bearing from one wall or partition to another, without any intermediate support, receiving the flooring boards on the upper surface or edges of the joists, and the ceiling, if there be one, on the lower. Joists in single floors should never be less than two inches in thickness, because of their liability to be split by the brads or nails of the boards if they are thinner; and they should never be much more, because of the keying of the ceiling, which is injuriously affected by great thickness of the joists. Twelve inches from joist to joist is the distance generally allowed; that dimension, however, from centre to centre of the joists would be better. Strength to almost any extent may be given by adding to the depth of the joists, and diminishing the distance between them; and they may be made firm, and be prevented from buckling or twisting, by putting struts between them. These struts are short pieces of batten, which should not be less than an inch, and need not be more than an inch and a half thick, and three or four inches wide, placed diagonally between the joists, to which they are nailed, in a double series, or crossing, as indicated by the full and dotted lines in the diagram, fig. 26; and they should be made to range in a right line, that none of their effect may be lost; and these ranges or rows should be repeated at intervals not exceeding five or six feet. The struts should be cut at the ends with exactly the same inclination or bevel, to fit closely. Great care should be taken, too, not to split the struts in nailing; but the trouble of boring

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Building. with a gimlet is saved by making a slight nick or incision with a wide-set saw for each nail, of which there should not be less than two at each end; and the nails used should be clasp-nails. If the struts were notched into the joists, it would add very materially to their efficiency, but perhaps not in proportion to the additional labour it would involve. This strutting should be



done to single flooring under any circumstances, as it adds materially to its firmness, and indeed to its strength, by making the joists transmit any stress or pressure from one to another. The efficiency of single flooring is materially affected by the necessity which constantly occurs in practice of trimming round fire-places and flues, and across vacuities. Trimming is a mode of supporting the end of a joist by tenoning it into a piece of timber crossing it, and called a trimmer, instead of running it on or into the wall which supports the ends of the other joists generally. A trimmer requires for the most part to be carried or supported at one or both of its ends by some of the joists, which are called trimming joists, and are necessarily made stouter than if they had to bear no more than their own share of the stress. Commonly it is found enough to make the trimmers and trimming joists from half an inch to an inch thicker than common joists. In trimming, tusk tenons should be used; and the long tongue or main body of the tenon should run not less than two inches through, and be draw-pinned, and wedged, moreover, if it do not completely fill the mortise in the direction of the length of the latter. The principal objection, however, to single flooring is, that sound readily passes through, the attachment of the boards above and of the ceiling below being to the same joists throughout. Another objection, and one already referred to, is the necessity of making the joists so thin, not to injure the ceilings, that they with difficulty receive the flooring brads in their upper edges without splitting. A partial remedy for both these disadvantages is found in a mode sometimes adopted of making every third or fourth joist an inch or an inch and a half deeper than the intervening joists; and to these, ceiling joists are notched and nailed, or nailed alone, as shown in the diagram, fig. 26. This, by diminishing the number of points of contact between the upper and lower surface, for the ceiling joists must be carefully kept from touching the shallower joists of the floor, is less apt to convey sound from one story to another, and allows conveniently thin joists to be used for the ceiling without affecting those of the floor. It clearly, however, involves the necessity of coggling the deeper joists down so much more on the wall-plates on which their ends rest.

Double flooring (see sections No. 1 and 2, fig. 27, and plan No. 3, fig. 29) consists of three distinct tiers of joists, which are called binding, bridging, and ceiling joists. The binders in this are the real support of the floor; they run from wall to wall, and carry the bridging joists above and the ceiling joists below them. Binders need not be less and should not be much more than six feet apart, that is, if the bridging or flooring joists are not inordinately weak. The bridging joists form the upper tier, and are notched down on the binders with the notch shown at No. 5, fig. 21. The ceiling joists range under the binders, and are notched and nailed as shown at No. 1, fig. 27; but the notch must be taken entirely out of the ceiling joists, for the lower face or edge of the binder may not be wounded by any means or on any account, and moreover no good would be gained in any other respect by doing so. When it is an object to save height in the depth or thickness of this species of floor, the ceiling joists may be tenoned into the binders, instead of being nailed on to them; in this case the latter must be chase-mortised on

one side, for the convenience of receiving the former when they are themselves set and fixed. A chase is a long wedge-formed groove of the breadth or thickness of the mortise, of which it is indeed an elongation, so that the tenon at one end of a ceiling joist being inserted in the regular mortise



in the binder prepared for it, that at the other end is driven along the chase up to its place in the mortise in the next binder. When ceiling joists are thus chase-mortised, their lower or under faces are allowed to come a little below the under face of the binders, and the space across is firmed down by slips not wider than the ceiling joists are thick. No. 2, fig. 27, shows a transverse compartment, or bay, of a floor in this manner; but it is not so good a one as the preceding; for, besides weakening the binders, by cutting so many mortises and chases in them, it is almost impossible to give the ceiling floor the degree of firmness and consistency it possesses in the other way, besides requiring the furring down on the binders. The same space would be better gained by cutting the bridging joists so much lower down; as they may, with the sort of notch indicated above, be let down fully half their depth without great injury to either bridging joists or binder, for they can always be made to fit tightly or firmly, and very little more labour is involved in notching deeply than slightly.

Flooring is said to be framed when girders are used together with binding, bridging, and ceiling joists. (See sections No. 1 and 2, fig. 28, and plan No. 4, fig. 29.) Girders are large beams, in one or more pieces, according to the length required, and the size and strength of which timber can be procured. They are intended for longer bearings than mere binders may be trusted at, and may be strengthened to almost any extent by trussing; but to be efficient, the height of the truss must always be greater than the depth of the beam itself, and the strength is increased by extending that height as the space or bearing increases. A truss is indeed a wooden arch, whose lateral thrust will of course be greater the smaller the angle subtended by it, and *vice versa*. It has been a commonly received opinion, that a truss within the depth of a girder adds materially to its strength; but experiments have proved that very little advantage is gained by such a one when executed in the best manner, and that, badly executed, the beam or girder is weaker with the truss than without it. Binders are made dependent on the girders by means of double tusk tenons, and on and to them the bridging and ceiling joists are attached in the manner before described. No. 1, fig. 28, shows the transverse section of a compartment or bay of a framed floor; No. 2 the same longitudinally of the girder, and of the bridging and ceiling joists, and transversely of the binders. No. 1, fig. 29, is the plan of a single floor of joists tailing in on wall-plates with two chains of struts, and trimmed to a fire-place. No. 2 is a floor similar to No. 1, with ceiling joists nailed to deeper flooring joists at intervals, as shown in fig. 26. No. 3 is the plan of a double floor; and No. 4 is that of a framed floor of joists, bays of which are shown in section at fig. 27 and 28.

Partitions of timber are called quartering partitions, and they are generally framed. Common quartering partitions which rest on a wall or floor, and have nothing to carry, consist merely of a sill, a head, and common up-rights to receive the lath for plastering: these last may be simply joggled or tenoned into the head and sill, in the manner shown at c, fig. 23, and stiffened by struts or stretching pieces put between them and nailed. When, however, a quartering partition is over a vacuity, or rests only on certain points, and has, moreover, to sustain a weight, a floor perchance, it is framed and trussed with

Building. king or queen posts and braces, on the principle of a roof; and the filling in of common uprights or quarters for the laths is generally performed by joggling them at one end into either head or sill, and nailing them securely to the raking braces. In the diagram No. 1, fig. 30, it is supposed that an opening or doorway is to be made in the partition, so that the timbers of the truss are placed around it with queen-posts, and a small internal truss is put over the door-head to prevent it from sagging, and to carry the long part of the partition, which we suppose required to bear a floor, so that the partition acts also, in fact, the part of a trussed girder in the most available form. No. 2 presents another method of framing a similar partition.

Shoring or propping up walls or floors, shoring for sewers, &c. is done by the carpenter. In appearance it is a simple operation, and under ordinary circumstances it really is so; but nevertheless it often demands the exercise of considerable skill and tact to determine and to counteract the tendency the part or thing to be supported has in one direction or another.

Pugging floors, furring down joists, and bracketing and cradling for plastering, and some other things, are operations performed indifferently by the carpenter or joiner, for they are not necessarily connected with the one more than the other of these two mechanical arts.

The labour of carpenter's work is valued by the square of one hundred superficial feet whenever it will admit of being so measured, and the timber is as generally valued by the cubic foot. It is customary for the carpenter's work to be measured at the same time with the walls and roof covering, or when the carcass of a building is completed, and before the joiner and plasterer commence their operations; for then it is all still exposed, and may be correctly and certainly measured, whereas much must be taken on trust if the measurement be deferred until the works are completely finished.

Bond timber, wood bricks, and wall and tem-plates, are taken under the same head, and are reduced to cubic feet of timber at so much per foot, including the labour of every kind on it. The naked flooring is taken on the surface from wall to wall, with a description of the nature of it, whether it be single, double, or framed—if trimmed to chimneys, party walls, stairs, or to any thing else—if notched or coggled to wall-plates and partition heads—the number and size of the large timbers, ceiling joists as notched and nailed to wall-plates, and as framed or notched and nailed to binders or common joists; and every thing indeed that affects the quantity of labour required in forming it. The superficial feet are reduced to squares for the labour and nails involved and used in forming and fixing or setting the floors. The timbers of which the flooring is composed are then taken in detail and in cubic quantities, and are said to be without labour, or with no labour. Roofing is measured in the same manner, by the superficial square, for labour and nails, taken on the common rafters from ridge to heel; the length of a rafter by the length of the roof for one side of a common span, and repeated or doubled for the other, noting also a description of the roof, whether it be lean-to or shed roofing, if on purlines and with struts; common span-roofing; curb roofing; span roofing with purlines and collar beams, strutted or otherwise, from walls or partitions; span roofing with framed principals, tie-beams, king-posts or queen-posts, straining beam, straining sill, struts, purlines, pole-plates, and so on or as the case may be, and this too for labour and nails. All the timbers are then taken, measuring every one to the extent of any tenon or tenons at its ends, in cubic quantities also, and as without labour. Bolts, bars, straps, stirrups, &c. are taken separately, and their dimensions noted from which to ascertain their

weight. Gutter-boards and bearers are measured and valued by the foot superficial, according to the thickness of the former. Rough boarding for lead on flats, and sound boarding for slates or lead, are taken superficially, and reduced into squares. Centring to vaults is measured on the periphery of the arch, or round back of the centre, for the breadth, by the length, and is valued by the square; to apertures in the thickness of walls, by the foot, and to camber-arches, by number, so much a piece. Quartering partitions are measured by the square for labour and nails, and the material is taken by the cubic foot. Battening to walls is also measured by the square, but the stuff is generally included with the labour, as in boarding. Cradling and bracketing is valued by the foot superficial, and with reference to the quantity of stuff required or worked up. Any planing that may have been necessary, and it will happen at times on beams, joists, &c. when it is not intended to have a ceiling under the floor, is charged by the foot on the surface, and any beading or other moulding by the foot running.

It sometimes happens that a superficial quantity for labour and nails on framed timber cannot be obtained; in that case the timber is measured by the cubic foot as framed, or with the labour of framing included with its own cost, &c. In this case, however, it is necessary to make a distinction between one quantity and another, as the labour employed upon an equal quantity of stuff in framing some parts of a roof is much greater than is required in most floors. Many things, such as strong door and window frames, that are to be worked into the walls, story-posts, brestsummers, &c. are always taken as framed timber, with any addition that may occur of wrought, rebated, beaded, &c. as the case may be.

The price or value to be attached to the varieties of carpenter's work depends almost as much on the texture or hardness of the timber employed, as on its cost. What the timber itself should be charged at may be thus determined. To its price in the gross at the timber merchant's must be added the cost of carriage to the spot where it is to be employed, which will be so much the load of fifty cubic feet, or so much per foot; then to the cost of each cubic foot of timber add the price of four superficial feet of sawing, which will form a fair average for the variously sized scantlings, and one eighth of the increased amount to it as an allowance for waste in cutting up and working. This gives the actual cost, to the builder, of the timber as it is worked up; and if it is to be charged as with no labour, his profit and a remuneration for his own labour of superintending, &c. alone remain to be included. If, however, labour of any kind is to be charged with the stuff, it should be added first, and the builder's profit, &c. taken on both, or on the increased amount for the price per foot. The cost of labour depends so much upon such a variety of circumstances, that it is impossible to aid the inquirer materially in apportioning prices for the various operations. In this, as in other things, it is well, when the parties are not otherwise qualified to determine a scale of charges, to observe the time a man or a certain number of men are employed in executing so much work of a certain description, and compare the quantity by measurement with the time employed in executing it, or rather with the wages of the workmen for the time. In fixing a price for labour in carpenter's work, the size of the timbers, and the heights they have to be hoisted, together with such scaffolding and machinery for hoisting as may be found necessary, if the timbers be heavy, and the height and expense great, must be considered. As the timber used in shoring is not consumed, a charge is made for use and waste to the amount of one third of its value if it be much cut up, and one fourth if but little, in addition to the labour of setting up and taking down, whatever that may be.

Building.

Building.

Joiner.—The principles of joinery also will be found in an article under that head in another part of this work; here we have merely to do with the modes of operation, and the tools employed by the workman, together with the manner of estimating or determining the value of his work.

The distinction between the operations of the carpenter and the joiner is shown in the commencement of the preceding section on the trade of the former. A man may be a good carpenter without being a joiner at all; but he cannot be a joiner without being competent, at least, to all the operations required in carpentry. It is, indeed, very truly remarked in the article JOINERY, "that the rough labour of the carpenter renders him in some degree unfit to produce that accurate and neat workmanship which is expected from a modern joiner;" but it is no less true that the habit of neatness and the great precision of the joiner, make him a much slower and less profitable workman than the practised carpenter, in works of carpentry.

The joiner operates on battens, boards, and planks, with saws, planes, chisels, gouges, hatchet, adze, gimblets and other boring instruments, which are aided and directed by chalked lines, gauges, squares, hammers, mallets, and a great many other less important tools; and his operations are principally sawing and planing in all their extensive varieties, setting out, mortising, dovetailing, &c. A great range of other operations, none of which can be called unimportant, such as paring, gluing up, wedging, pinning, fixing, fitting, and hanging, and many things besides which depend on nailing, &c. such as laying floors, boarding ceiling, wainscoting walls, bracketing, cradling, fiering, and the like. In addition to the wood on which the joiner works, he requires also glue, nails, brads, screws, and hinges, and accessorially he applies bolts, locks, bars, and other fastenings, together with pulleys, lines, weights, white-lead, holdfasts, wall-hooks, &c. &c.

Battens are narrow boards running from half an inch to an inch and a half or two inches thick, and from three to six or seven inches wide. A piece of stuff of too small a scantling to be a batten is called a fillet. The term board is applied to sawed stuff when its width exceeds that of a batten, and its thickness does not exceed two inches or two inches and a half. The term plank is applied to large pieces of stuff whose width is great in proportion to their thickness, and whose thickness nevertheless does not exceed three or four inches. In London these terms are used in much more restricted senses than they are here described to mean, because of the fixed and regular sizes and forms in which stuff for the joiner's use is for the most part brought to market there. A batten, to a London joiner, is a fine flooring board from an inch to an inch and a half in thickness, and just seven inches wide. A board is a piece cut from the thickness of a deal whose width is exactly nine inches; and every thing, almost, above that width, and not large enough to be called a scantling of timber, is a plank.

The joiners' work for a house is for the most part prepared at the shop, where every convenience may be supposed to exist for doing every thing in the best and readiest manner; so that little remains to be done when the carcass is ready, but fit, fix, and hang, that is, after the floors are laid. The sashes and frames, the shutters, back flaps, backs, backs and elbows, soffits, grounds, doors, &c. are all framed and put together, that is, wedged up and cleaned off, at the shop; the flooring boards are prepared, that is, faced, shot, and gauged with a fillister rebate; and all the architraves, pilasters, jamb linings, skirtings, mouldings, &c. are all got out, that is, tried up, rebated, and moulded, at the shop.

When the carcass of a building is ready for the joiner, the first thing to be done is to cut the bond timber out of

the openings, set the sash frames, and fill them with old sashes or with oiled paper on frames, to exclude the weather, but admit light. The flooring joists are then proved with straight-edges, and any inequalities in them are removed with the adze; the flooring boards are next cut down to their places, and they are turned with their faces downwards until the ceilings are done; but first the pugging floors, if any are intended, are formed, and the pugged clay is put in on them. Floors are in ordinary cases either straight joint or folding, and are edge or face nailed. Folding floors are those in which three, four, or five boards are laid at a time, with their heading joints all on the same joist, and of course in the same straight line. In laying them, one board being firmly nailed to the joists at the extremity of the floor, another is laid parallel to it at the distance of the width of three or four others, or rather within their width, and these are then forced down and nailed, the forcing having brought all the joints up close. This is a bad mode, however, and should never be used. Straight joint flooring is when every board is laid separately, or one at a time, the heading joint or joints being broken or covered regularly in every case. Straight joint flooring may be with square joints, when it is entirely face nailed, or it may be dowed or tongued, when it is side or edge nailed only. Dowelling is the driving pins of wood or iron half their length into the edge of the last laid board, the outer edge of which has been skew-nailed, their other ends running into holes prepared for them in the inner edge of the next board, in the way the head of a cask is held together, and then its outer edge is skew-nailed in the same manner, and so on. Tongueing is effected by grooving both edges of every board, and fitting thin slips and tongues into them, as described in the article JOINERY. The boards are forced together by pressure applied to the outer edge; wedges with iron dogs driven into the joists are commonly used, but they are very objectionable instruments. The nail used in face-nailing floors is called a flooring brad; it has no head, but a mere tongue projecting on one side of the top of the nail, which is put in the direction of the grain, that it may admit of being punched in below the surface level, otherwise the superficial inequalities could not be reduced when the floor was completed, because of the projecting heads of the nails. For side or edge nailing, however, clasp-nails, nails whose heads extend across on two of the opposite sides, are used.

Another early operation the joiner has to attend to, is the fixing of the framed door and window and the narrow skirting grounds (see fig. 35) to which the plasterers may float their work. The skirting grounds are generally dovetailed at the angles, and are well blocked out, so that they may not vibrate on being struck, or yield to pressure when the plasterer's straight-edge passes roughly over their surface; they must also be set with the utmost truth and precision. When the floors are cut down and the grounds fixed, the joiner's operations in a building should be suspended until the plasterers have finished, or nearly so, and then the floors may be laid. By deferring this operation until that period, the workmen of the two different trades are prevented from interrupting each other, and indeed injuring each other's work; and joiners always find employment in the shop preparing, as before intimated.

The preparation flooring boards receive, is planing on the face, shooting on the edges, and gauging to a thickness; the common fillister, or stop rebate plane, being used to work down to the gauge mark, from the back of every board, and about half an inch in on each edge. When a board is to be laid, it is turned on its face in the place it is to occupy, and the workman with his adze cuts away from the back over every joist down to the gauge rebate,

Pl. CXL.

Building. so that on being turned over it falls exactly into its place, and takes the same level with all its fellows, which have been brought to the same gauge; then follows the process of laying as before described, and the result must, if the work be done well, be a perfectly even and level surface. The slight inequalities of surface which may occur are reduced with a smoothing-plane, the brads being previously punched below the surface if the floor be face-nailed. See the article JOINERY, sections 35 and 36.

In getting out skirtings, if the work be of a superior description, the boards should be tried up as if for framing in every particular except bringing to a width, which need not be done. The face edges, however, must be worked with great precision, and moulded or rebated as the case may require. Rebating or tonguing will be necessary when the skirting consists of more than one piece, that the different pieces may be made to fit neatly and firmly together; and all but the lowest piece must of necessity be brought to a width, as well as tried up in other particulars. A skirting in a single width is called by that term; but when it is made up of more than one part it is designated a base: the lowest board is then called the skirting board, and the upper the base moulding or mouldings. (Fig. 31 and 35.) The reason why the skirting board is not brought to a width is, that the labour would be lost according to the ordinary mode of fixing it. The board is applied to its place with its lower edge touching the floor; but as the most perfectly wrought floor will be likely to have some slight unevenness of surface so close to the wall, a straight-edge would not fit closely down it in every part. The board is therefore propped up at one end or the other until the upper or faced edge is perfectly parallel with the average line of the floor, or rather to be perfectly level. A pair of strong compasses, such as those used by the carpenter, is taken, and opened to the greatest distance the lower edge of the skirting board is from the floor throughout its length; the outer edge, near the point of one leg of the compasses, is then drawn along the floor, whilst the point of the other, being kept vertically above it, is pressed against the face of the board, on which it marks a line exactly parallel to the surface of the floor, indicating, of course, every, even the slightest irregularity there may be in it. If the floor be not a very uneven one, the excluded part may be ripped off with the hand or the panel saw, which may generally be made to follow the traced or inscribed line exactly; if, however, the line be a very irregular one, having quick turns in it, the hatchet must be used. This operation is called *scribing*, and the result of it is evidently to make the skirting fit down on the floor with the utmost precision. Care must be taken, in performing the operation, that the upper edges of the skirtings be not only level, but that all which are in immediate connection be scribed to an equal height, that their upper edges may exactly correspond. Sometimes skirtings are let into a groove in the floor, as indicated in the diagram, fig. 35, and thus a slight degree of shrinking is made of less importance, and scribing rendered unnecessary. Before skirtings are fixed, vertical blocks are put at short intervals, extending from the floor to the narrow grounds, and made exactly flush with and true to the latter, and are firmly nailed. These form a sound backing, to which the skirtings may be bradded or nailed; and so prevent them from warping or bending in any manner. If, however, the skirting be not very wide, and be sufficiently stout to stand without a backing, a fillet only is nailed along the floor as a stop for its lower edge; but this is rendered unnecessary if the skirting be tongued into the floor, as the tongue will answer every purpose of a stop. The ends of skirtings should be tongued into each other when it is necessary to piece them in length; and on returns or an-

gles the end of one should be tongued into the return-face of the other in the square parts, and mitred in the oblique-angled or moulded.

When a chair-rail or surbase is required, grounds similar to those for the base are fixed to range like them with the face of the plastering; the surbase itself must be wide enough to cover the grounds and the joints formed by them and the plastering, completely; it is in effect a cornice to the stereobate and the space intervening it, and the base is generally understood to be wainscotted, though it is more frequently plastered.

In framing or framed work, the outer vertical bars which are mortised are called styles; and the transverse, those on whose ends the tenons are formed, are called rails. (Fig. 32.) In doors, particularly, the open spaces or squares formed internally by the rails and styles are divided in the width by bars parallel to the styles. These are tenoned into the rails, and are called mountings, or, vulgarly, *muntins*. The frame being formed by trying up, setting out, mortising, and tenoning, the inner or face edges of the styles, and of the highest and lowest rails, and both edges of the muntins and of the inner rails, are grooved with the plough to receive the edges and ends of the filling-in parts, or panels of the frame-work. Panels are either flat, raised, or flush. (Fig. 33.) Flat panels are no thicker than the grooves into which they are fitted, and consequently their faces are as much below the surface of the framing as the groove is in from each side of the styles and rails. Raised panels are thicker than the groove in the framing, but are not so thick as to reach the surface; nor is the panel thickened through its whole extent. It fits exactly into the groove, and thickens gradually for an inch or two, and then sets off at a right angle with the surface, increasing suddenly three or four sixteenths of an inch. A panel may be raised on one side only, or on both sides. Flush panels are rebated down from one face to the distance the plough groove is in from the surface of the framing; and the back of a panel thus rebated on one side is worked down to be even with the other edge of the groove, leaving a tongue to fit it exactly; for if it be required to make panels flush on both sides, it is generally effected by filling in on the back or flattened side with an extraneous piece. Framing is not, however, often finished in the manner above described, especially with raised and flush pannels; mouldings are generally introduced, and are either struck or worked in the solid substance of the framing, or in separate pieces or slips, and laid in with brads. If a moulding be struck or laid in on one side only, and the other is left plain, the framing is described as moulded and square, a flat panel being in that case understood; if the panel be raised the framing will be described as moulded with a raised panel on one side, and square or flush the other. It may be moulded with a flat panel, or moulded with a raised panel, on both sides; and the moulding may, as before intimated, be either struck in the solid, or laid in in any of the preceding cases. Mouldings which are laid in round the panels of framing are neatly mitred at the angles, and bradded, to appear as much as possible as if they were struck in the solid. In nailing or bradding the mouldings, the brads should be driven into the frame-work, and not into the panels. With a flush panel, however, the moulding is always either a bead, or a series of beads called *reeds*; and is, in the case of a single bead, which is most common, always struck on the solid frame, and the work is called bead-flush; but reeds are generally struck on the panel in the direction of the grain, and laid in on the panel across it, or along the ends; this is termed reed-flush. Flush panels in inferior works have a single bead struck on their sides in the direction of the grain alone, the ends abutting plainly, as in the first diagram of a flush panel, and this is

Building. termed bead-butt, the fact that the panels are flush being inferred. The plainest quality of framing, in which it is square on both sides, is used in the fittings of inferior bed-rooms, inner closets, and the plainer domestic offices, but always internally; framing moulded on one or both sides, in rooms and places of a greater degree of importance, and in places where the work may be more generally seen; in some cases a flat panel may be enriched by a small moulding laid on its surface, leaving a margin between it and the larger moulding at its extremities; this may be done in drawing-rooms and apartments of that class, especially if they be in an upper story; and raised panels should be confined to the framed fittings of dining-rooms and other apartments on a ground or principal story. Framing with flush panels is almost restricted to external doors, &c. one side of a door being bead-flush, and the other flat and moulded, perhaps, or the face may be moulded with a raised panel, and the back bead-flush; and this for principal entrances. Bead-butt framing is found in external doors to offices, &c. Doors are made four panelled for the most part when the panels are flat and the framing square, six panelled when the latter is moulded, and six, eight, or even ten panelled when the framing is of the superior descriptions. Doors which are hung in two equal widths to occupy the doorway, and are hung to the opposite side posts or jambs of the frame, are said to be double margined; that is, the styles or margins are repeated necessarily in the middle where they meet. Doorways are fitted with jamb linings, and architraves or pilasters. Jamb linings may be framed to correspond with the door on the outer faces; and when they exceed nine or ten inches in width they should always be so, or they may be solid. Narrow and plain jamb linings to interior rooms are rebated on one side only, and the rebate forms the frame into which the door is fitted. To superior work they are rebated on both sides, as if it were intended to put a door on each side. The jambs are fixed to the inner edges of the grounds; and if they are wide, and not framed, backings are put across to stiffen them; and these backings are dovetailed into the edges of the grounds. Architraves and pilasters are variously sunk and moulded, according to the fancy of the designer. They are fixed to the grounds with their internal edges exactly fitting to the rebates in the jambs, and they form the enriched margin or moulding of the frame in which the door is set. Architraves are mitred at the upper angle, but pilasters have generally a console or an enriched block or cap resting on them, to which they fit with a square joint; both the one and the other either run down and are scribed to the floor, or rest on squared blocks or bases, which may be the height of the skirting board, or of the whole base.

The parts of the outside frame of a sash are distinguished by the terms applied to the similar parts of common framing. The upright sides are styles, and the transverse or horizontal ones, which are tenoned into the ends of the styles, are rails; but the inner frame-work or divisions for the panes are called merely upright and cross bars; the upright being the mortised, and the cross bars the tenoned, nevertheless, as with the outer frame-work. (Fig. 31.) Sashes are got out like common framing; the parts are tried up, set out, mortised and tenoned, exactly in the same manner, allowance being made in the length of the rails and all tenoned pieces, in the setting out, as in common framing also, for the portions of the mortised styles and upright bars, which are worked away in forming the moulding and rebate. The meeting rails of sashes which are in pairs, to be hung with lines, are made thicker than the other parts by the thickness of the parting bead, and they are bevelled or splayed off, the one from above and the other from below, that they may meet and fit closely.

Building. When the frame-work is completed, although it cannot be put together because of what has just been referred to, the rebate is formed by the sash fillister on the further part of the face edge, and the moulding struck on its hither angle. These things being done, the moulded edges are either mitred or scribed at the shoulders and haunches, and the sash may be put together. If sash bars are mitred at the joints they require dowels in the cross bars to act as tenons; but if they can be scribed, dowelling is not required. Sashes are either fixed or hung with hinges, or with lines, pulleys, and weights. Fixed sashes are put into frames, of which every part may be solid but the stop, which must be put in behind the sash to detain it. Sashes hung with hinges require solid rebated frames; but there can be no stops to them except their own movable fastenings, and the outer stop, which of course the rebate furnishes. Sashes hung with lines require cased frames to receive the pulleys and weights. The sill of the frame is made, as in the former cases, solid, is sunk and weathered, and is generally made of a more durable material than the rest of the frame; the sides in the direction of the thickness of the frame are of one and a quarter or one and a half inch board, very truly tried up, and grooved to receive a parting bead; for it must be obvious that sashes hung with lines to run vertically up and down within the height of the frame must be themselves in two heights, and must pass each other in two separate and distinct channels. The ends of these boards are fixed into the upper face of the solid sill below, and into a similar board parallel to the sill which forms a head above, and they are called pulley pieces, or styles, because they receive the pulleys, which are let into them near their upper ends. Linings from four to six inches in width, and from three fourths of an inch to an inch in thickness, are nailed on to the edges of the pulley pieces, and to the sill and head above and below, inside and outside in the direction of the breadth of the sash frame, and are returned along the head in the direction of its length. The outside linings are made to extend within the pulley pieces about half an inch, to form a stop for the upper and outer sash; and the inside linings are made exactly flush with their inner faces. The casing is completed by fixing thin linings on to the outer edges of the outside and inside linings, parallel to the pulley pieces, to prevent any thing from impeding the weights. Thin slips called parting beads are fitted tightly into the grooves previously noticed in the pulley pieces, but they are not fixed, as the upper sash can be put in or taken out only by the temporary removal of the parting bead. An outer or stop bead is mitred round on the inside to complete the groove or channel for the lower sash; the stop bead covers the edge of the inside linings on the sides and head, and is fixed by means of screws, which may be removed without violence when it is required to put in or take out the sashes. A hole covered with a movable piece, large enough to allow the lead or iron weight to pass in and out, is made in each of the pulley pieces, so that the sashes may be hung after the frames are set, and to repair any accident that may occur to the hangings in after-use. (Fig. 34.) It may be here remarked, that sash-frames require greater truth and precision from the workman than any thing else in the joiner's work of a building; and unless the stuff employed be quite sound and perfectly seasoned, all the workman's care in operating will be thrown away. The fittings of a window which has boxed shutters consist of back linings, grounds, back, elbows and soffit, together with shutters and back flaps, and architraves or pilasters round on the inside to form a moulded frame. (Figs. 31 and 34.) Back linings are generally framed with flush panels; they fit in between the inside lining of the sash frame and the framed ground, to both of which they are attached, and

Building. form the back of the boxing into which the shutters fall back. They are tongued into the inside lining by their inner edge, and on their outer edge the ground is nailed, and they are set at right angles to the sash-frame, or obtusely outwards, as the shutters may be splayed or not. The back is the continuation of the window fittings from the sash-sill to the floor on the inside; the elbows are its returns on either side under the shutters, and the soffit is the piece of framing which extends from one side of the window to the other, across the head, the width or extent of the shutters. These are all framed to correspond with the shutters on the face; but, as they are fixed, their backs are left unwrought. Window shutters are framed in correspondence with the door and other framed work of the room to which they belong, in front, and generally with a flush panel behind: the back flaps are in one or two separate breadths to each shutter, according to the width of the window and the depth of the recess; they are made lighter than the shutters themselves; and they should, when shut to, present faces exactly corresponding with those of the shutters, both internally and externally. The shutters are hung to the sash-frame with butt hinges, and the back flaps are hung to their outer styles with a hinge called a back flap, from its use. The shutters and their back flaps are hung in one, two, or more heights, as may be found convenient. The moulded margin round the boxings of a window on the inner face are made to harmonize generally with the similar parts of the doors of the room or place to which it belongs. The fixing and hanging of window fittings or dressings are hardly less important, for the accuracy required, than the making and fixing of the sash-frame itself; the slightest infirmity or inaccuracy in any part will be likely to derange some important operation. Sashes, it may be remarked, are never fitted until the frames are immovably fixed, so that if there be any inaccuracy in the latter, the sashes are cut away or pieced out to make them fit; but, as they are intended to traverse, the fitting in that case can only apply to one particular position, and in every one but that there must be something wrong. Any incorrectness in the sash-frame, again, must throw the shutters and their back flaps out; indeed the sash-frame, though apparently a secondary part of the arrangement, is that which affects all the rest beyond anything else. When sashes have been fitted, a plough groove, wide and deep enough to receive the sash-line, is made in the outer edges of the styles, for about two thirds of their length, at their upper ends. They are then primed and glazed, and when the putty is sufficiently set the joiner hangs them. He is furnished with sash-line, tacks, and iron or lead weights, which are generally made cylindrical, with a ring at one end, to which the line may be attached. A sash is weighed, and two weights are selected which together amount to within a few ounces of the same gravity. The line is then passed through the pulley, which was previously fixed in the pulley style; the end is knotted to a weight which is passed in at the hole left for the purpose, and at a sufficient distance, which a common degree of intelligence will readily determine; the line is cut off and the end tacked into the groove in the style of the sash.

Glue is used principally in putting framed work together, but not at all in fixing; and even for the former purpose it is much less used by good workmen than by inferior ones. When the stuff is well seasoned, and the trying up, setting out, mortising, and tenoning, are well and accurately executed, there is no necessity for glue on the tenons and shoulders; the wedges alone need be glued, to attach them to the sides of the tenons, that their effect may not depend on mere compression. Joiners are generally furnished with a cramp, with which to force the joints of framing into close contact; it is either of wood

acting by means of wedges, or of iron with a screw. This, too, is unnecessary with good work, every joint of which may be brought perfectly close without great violence of any kind. The cramp will sometimes give bad work the semblance of good, but it cannot make it really so. If any cracking and starting be heard in the joiner's work of a new building, it generally indicates one of two things; either the cramp has been required in putting the framing together, or, having been put together, it has been forced out of winding in fixing, and the constrained fibres are seeking to regain their natural position. A good workman does not require a cramp, nor will his work, if he has been supplied with seasoned stuff, ever require to be strained; and consequently the cracking and starting of joiner's work indicates unfit stuff or bad work, or perhaps both. It is true that glued joints will sometimes fly; but when they do, there need be no hesitation in determining the presence of both bad work, and stuff in an improper state.

Floors are measured and valued by the square of a hundred superficial feet; but any thing beyond the mere flooring, such as the mitred borders generally put as a margin to the stone slab of a fire-place, is taken extra by the foot superficial, or running, as the additional work may be above or below three inches in width. The first important thing to note in measuring a floor is the thickness of the boards, by which to determine the cost of the principal material. A floor of boards unplanned on the face, and shot on the edges, laid folding, is the roughest that can be supposed; with the boards wrought or planed on the face, and laid in the same manner, will be the next in advance; and straight joint flooring, in all its varieties, is the most troublesome, and consequently the most expensive in common and general use. Whether the boards be wide or narrow is a consideration to be noted, an equal surface being of course more rapidly covered with wide than with narrow boards; whether they be gauged, and if brought to a thickness throughout, or only rebate gauged, and cut down on the joints with the adze; in what manner the heading joints are formed and secured; how the longitudinal joints are executed, whether square, ploughed and tongued, or doweled; and whether the boards are face or edge nailed. Solid frames, as for outside doors, &c. are measured and valued by the cubic foot, labour being calculated upon the stuff according to the nature and extent of what may have been applied to it.

With trifling and unimportant exceptions, every thing else in joiner's work that exceeds three inches in width is taken by the superficial foot; and the dimensions are taken on the finished and fixed work, so that allowances must be made for whatever waste may have been of necessity made. The stuff worked up by the joiner is always supposed to have been in planks and boards a certain number of quarters of an inch in thickness, so that whatever the finished work may stand, it is taken as of the thickness which in quarters of an inch it is next below; thus, if the styles of a door stand at even less than an inch and seven eighths, it is taken as a two-inch door; for a piece of framing is always considered to be of the thickness of its outer frame-work, the description determining the substance of the panels. Framed grounds are measured round on the outside for the length; their width is not that of the frame, but of the styles and head as they actually are; and their thickness that of the stuff before it was planed at all. Narrow grounds are taken by the foot running, their width being noted in the description of them. Jamb linings are measured to the full length they may be of by their width, the thickness being noted, together with a description of the work on them,—if they are single or double rebated, if framed, and in what manner, &c.

The dimensions of a door are generally taken within the rebates in which it is to hang, with its thickness and description noted,—as of four, six, or eight panels, moulded on one or both sides, with flat or raised panels, &c.; if it be double margined, that is stated, and the amount of the lap or rebate in their meeting styles is added to the width, to increase the superficies by so much. The hinges with which a door is hung, and the lock or other fastenings which may be on it, are taken, with a description of their sizes and qualities, immediately after the door itself. If sashes are in a solid frame they are taken alone, but sashes in cased frames are measured in and with the frames. To the clear height between the sill and the head, three inches are added for the thickness of the sill, and four inches for the depth of the case at the head, for the height; and to the width between the pulley-styles is added eight, nine, or ten inches, as the case may be, for the breadth of the casing on each side, for the width; these give the superficies of the sashes and frame. The sashes and frame are described, with the thickness of the former, which determines that of the latter; the sill is described as sunk or merely weathered; the pulley-styles as of such a thickness; the pulleys, line, and stuff employed in the different parts of the frame as of such and such qualities and sorts; and whether the sashes be single or double hung, with what fastenings, &c. The boxings for the shutters are taken in a superficial quantity, as square or splayed, if circular on plan, whether with a flat or quick sweep, or if circular headed, and straight on plan. The back linings, the backs, elbows, and soffits, the shutters and the back flaps, are all measured by the superficial foot, according to their thicknesses and descriptions, the hinges and fastenings of the shutters and back flaps being numbered and noted independently of them. The capping to backs is taken by the running foot; and elbow cappings are numbered. Moulded architraves are taken superficially, the length by their girt, or by the run at such a girt. Skirtings are measured superficially at such a thickness, as scribed or tongued, as square or moulded, or rebated for base moulding, as the case may be. Base and surbase, and indeed all other moulding which girds at four inches and above, should be taken superficially; and mouldings which are of less girt may be taken by the run if they be taken independently of the other work, or that to which they belong, at all. A moulding projecting from the face of the work to which it belongs may be assumed as independent of it; whereas a receding one, if it be small, will merely add the character of moulded to the work, and if large will qualify all in immediate connection with it to be taken as a superficial quantity of moulding. All circular work, or work which diverges from a straight line, is noted and charged proportionally to the additional labour and waste of stuff involved; the shorter the radius of the arc, or quicker the sweep, the higher must be the proportioned charge. Things which have been bent to their flected form are less costly in proportion than those which must have been worked in the solid or glued up in thicknesses.

Stairs are measured by the superficial foot, the length of one step being taken by the breadth of a step and riser, increased by once the thickness of the former for a quantity, and this multiplied by the number of steps there may be of the same kind; that is, when the steps are flyers; for in winding steps the treads and risers are taken in separate dimensions, for greater accuracy. The thicknesses of the steps and risers are noted, as well as the mode in which they are worked; they have either rounded or moulded nosings, are housed into the string, or have returned nosings, the riser being mitred to the string or to cut brackets on the ends of the steps. Curtail ends to steps are numbered.

The frame-work or bearers on which the stairs rest is included with the stairs themselves. String-boards are taken according to their thickness and the quantity of work on them; the grooves or housings in them are numbered. The capping on a close string is taken by the run; but when the nosings of the steps are returned, the strings are said to be cut; and if there are any cut and mitred blocks, they are numbered. Stair skirting is taken as raking and scribed, and as straight, circular, ramped, or wreathed, by the foot superficial; wooden balusters are taken by the run, and the mortises or dovetails in which they are set are numbered; newels are taken by the run for the stuff and the fixing, and the turnings on them are numbered. Hand-rails are said to be merely rounded, or moulded; they are measured by the running foot; and a distinction is kept up between the straight, the circular, the ramps, the wreaths, and the scroll; nuts and screws in their joints are numbered.

All sorts of framing, whether it be fixed or hung—all linings above three inches in width—all sorts of ledged work, such as plain doors and shutters, partitions in lofts and stables, bracketing, cradling, &c.—must be measured superficially. All narrow linings, very narrow skirtings, staff beads, fillets, water trunks and spouts, legs, rails, and runners to dressers, groovings, flutings, reedings, cappings, &c. and any work on superficial quantities that does not pervade the whole, but is in itself peculiar, should be taken lineally, or by the running foot. Insulated parts, such as short, interrupted grooves, blocks, pateras, brackets, trusses, cantilevers, holes, mortises for articles taken lineally, mitres to cornices, heads and feet to flutes and reeds, &c. are numbered and charged at so much a piece. Ironmongery goods employed by the joiner are numbered under their different heads, and charged as fixed; that is, to the price of a lock is added a charge for the labour employed in fitting and fixing it, and whatever accessories it may have required which are not included in its own cost, such as screws, &c. to a rim or dead lock. To the price of hinges, however, only the cost of screws should be added, as the fixing of them is usually included in hanging the work to which they are attached.

The cost at which joiners' work can be executed can only be determined by calculation and observation. The cost of the materials employed may be readily determined by dissecting a piece of work and reckoning its contents; but the labour depends on so many contingencies, that very accurate observation indeed is necessary to determine the quantity that may have been required to produce a certain result. In carpenters' work, the material forms the principal part of the charge; but in joiners' work the materials are for the most part of far less importance than the labour which has been expended on them. The stuff employed in a sash must be costly indeed to amount to as much as the labour of making the sash; whereas, in most doors, under ordinary circumstances, the materials may cost as much as the labour.

Sawyer.—The labour of the sawyer is applied to the division of large pieces of timber or logs into forms and sizes to suit the purposes of the carpenter and joiner. His working place is called a saw-pit, and his almost only important tool a pit-saw. A cross-cut saw, axes, dogs, files, compasses, lines, lamp-black, black-lead, chalk, and a rule, are all accessories which may be considered necessary to him.

Unlike most other artificers, the sawyer can do absolutely nothing alone: sawyers are therefore always in pairs; one of the two stands on the work, and the other in the pit under it. The log or piece of timber being carefully and firmly fixed on the pit, and lined for the cuts which are to be made in it, the top-man standing on it,

Building. and the pit-man below or off from its end, a cut is commenced, the former holding the saw with his two hands by the handle above, and the other in the same manner by the box handle below. The attention of the top-man is directed to keeping the saw in the direction of and out of winding with the line to be cut upon, and that of the pit-man to cut down in a truly vertical line. The saw being correctly entered, very little more is required than steadiness of hand and eye in keeping it correctly on throughout the whole length. It is the custom to project so much of the log over the first transverse bearer as can be done without rendering it liable to vibrate or be insecure; and when all the cuts proposed are advanced up to that bearer, the end is slightly raised to allow the bearer to be passed out beyond the termination of the advanced cuts. The advantage of, or rather the necessity for, the movable handle at the lower end of the saw is now evident, the top-man removing the saw readily from cut to cut from above, his mate having merely to strike the wedge in the box one way or the other, to fix or loosen it.

It is absolutely necessary that the top-man should stand in such a manner on the log or piece operated on, that a line down the centre of his body shall fall exactly upon the line of the cut he is to work on, and be as exactly perpendicular to it and to the plane of the horizon. He must, therefore, when the cut is near the outer edge, be provided with a board or plank, one end of which may rest on something firm at a short distance from the log, and the other on or against it, to put the outer foot on, and so keep himself in such a position that he may always, and without constraint, see his saw out of winding, and so that a spectator standing on the fore end of the pit may see the saw an imaginary line passing down the centre of the workman's body, and the line of the cut in exactly the same vertical plane. The labour of the top-sawyer should consist solely in lifting the saw up by the handle as high as his arms can carry it, and that of the pit-man in drawing it down with a slight pressure or tendency onward, sufficient to make it bite into the timber as much as his strength will enable him to make it cut away. The only assistance the pit-man should give in lifting the saw is in holding it back that the teeth may not drag against the cut in the ascent; and all the top-man should do in cutting downward is to keep the teeth steadily and firmly in contact with the part to be eroded. Good workmen may work with a narrower or closer set to their saw than bad ones can, though the wider or more open set saw is more liable to make bad work. It works more slowly and consumes more stuff than the close set; but it is not so likely to hang in the cut with the unnecessary pushing up of the pit-man and jerking down of the other, as if it were set more closely. A good top-man, nevertheless, is of much more importance, though he be badly mated, than the converse. Indeed the best possible pit-man could not work satisfactorily with a bad top-man, and therefore the latter is always considered the superior workman, and on him devolves the care of sharpening and setting the saw, &c. In the operations of the carpenter and joiner much depends on the manner in which the sawyers have performed their part. The best work on the part of the carpenter cannot retrieve the radical defects in his materials from bad sawing; and although the joiner need not allow his work to suffer, bad sawing causes him great loss of stuff and immense additional and otherwise unnecessary labour. Planks or boards, and scantlings, on coming from the saw-pit, should be as straight and true in every particular, except mere smoothness of surface, as if they had been tried up on the joiner's bench; and good workmen actually produce them so. Saw-mills, too, by the truth and beauty with which they operate, show the sawyer what may be

effected; for though he can hardly hope to equal their effect, he may seek to approach it.

Sawyers' work is valued at so much the hundred superficial feet; the sawing on a board or squared scantling being once its length, by a side and an edge, or half the amount of its four sides. In squared timber, however, it is generally valued at so much per load of fifty cubic feet, four cuts to the load, any cuts exceeding that number being paid for at so much per hundred feet; in this case the length of the cut by its depth gives the superficial quantity of sawing in it. Pieces again of determined and equal length and breadth, such as the deals and planks commonly used for joiners' work in this country, admitting of a regulated scale, the sawing that may be required in them is valued at so much the dozen cuts.

Modeller.—The modeller copies, in a solid material, the drawings of designs which may have been prepared for enrichments, in whatever material they are to be cast, whether in plaster, in metals, or in composition of any kind, for the plasterer, smith, or decorator. The model is made in a finely tempered and plastic clay, or in wax; and the modeller works with his fingers, assisted by a few ivory or bone tools for finishing off neatly and sharply, and for working in parts which he cannot reach with his fingers. He is generally the best workman who can do most towards producing the required forms with his fingers unassisted by artificial tools, as a greater degree of ease and freedom almost always results from the use of the hands alone. The model being completed, it is moulded, that is, moulds are made fitting it exactly in every part, and fitting exactly to each other at the edges, and in these, casts are made to any extent that may be required.

The modeller having some pretensions to be considered an artist rather than a mere artificer, he is for the most part paid according to his merits as such, rather than for so much time, according to the ordinary mode of determining the value of artificers' works.

Carver and Gilder.—The carver is strictly an independent artist, whose business it is to cut ornaments and enrichments in solid and durable material, such as wood and stone, so that, like the modeller, he must be paid according to the taste and power he may exhibit in his works, rather than as a common artificer. Carving has, however, been in a great measure superseded by modelling and casting, so that the carver is hardly known in economic building except in connection with the gilder. Gilding may indeed be applied to castings as well as to carvings; but the former being, almost as a matter of course, less sharp and spirited in their flexures and details, as well as less firm in substance than the latter, castings can less bear to be further subdued by the application of foreign matters to their surfaces than carvings may.

Gilding is the application of gold leaf to surfaces, which require, however, to be previously prepared for its reception. The work is first primed with a solution of boiled linseed oil and carbonate of lead, and then covered with a fine glutinous composition called gold size, on which, when it is nearly dry, the gold leaf is laid in narrow slips with a fine brush, and pressed down with a piece of cotton wool held in the fingers. As the slips must be made to overlap each other slightly, to insure the complete covering of the whole surface, the loose edges will remain unattached; these are readily struck off with a large sable or camel-hair brush, fitted for the purpose; and the joints, if the work be dexterously executed, will be invisible. This is called oil gilding, and it is by far the best fitted for the enrichment of surfaces in architecture, because it is durable, and is easily cleaned, and does not destroy or derange the forms under it so much as burnished gilding does. This latter requires the work to be covered with

Building. various laminæ of gluten, plaster, and bole, which last is mixed with gold size, to procure the adhesion of the leaf. The most durable mode of gilding metals in common use is by amalgamation.

The surfaces generally operated on by the gilder are so diverse, that the real value of his work can be determined satisfactorily only by taking his time and the materials employed and consumed in executing a piece of work.

Plumber.—Lead, as the name imports, is the material in and with which the plumber operates. The previous preparation, casting and milling of lead into sheets, pipes, &c. and the composition and uses of solder, will be found described under the head PLUMBERY.

The principal operations of the plumber are directed to the covering of roofs and flats, laying gutters, covering hips, ridges, and valleys, fixing water trunks, making cisterns and reservoirs, and laying on the requisite pipes and cocks to them, fixing water-closet apparatus, setting up pumps, and applying indeed all the hydraulic machinery required in economic building. His tools are knives, chisels, and gouges for cutting and trimming, rasps or files and planes for fitting and jointing, a dressing and flattening tool for the purposes its name expresses, iron hammers and wooden mallets for driving and fixing, ladles in which to melt solder, grozing irons to assist in soldering, a hand-grate or stove which may be conveniently moved from place to place, for melting solder and heating the grozing irons, a stock and bits for boring holes, and a rule, compasses, lines and chalk for setting out and marking, together with weighing apparatus, as the quantities of most of the materials used by the plumber must be either proved or determined by weight. A plumber is always attended by a labourer, who does the more laborious work of carrying the materials from place to place, helps to move them when they are under operation, melts the solder and heats the grozing irons, attends to hold the one or the other, as neither may be set down or put out of hand when in use, and assists in some of the minor and coarser operations. In boarding roofs, flats, and gutters for lead, clasp-nails or flooring brads should be used; and the first care of the plumber should be to punch them all in from an eighth to a quarter of an inch below the surface, and stop the holes carefully and completely with putty, or a chemical process will ensue on the slightest access of moisture if the iron heads of the nails come in contact with the lead, and the latter will, in the course of no long period, be completely perforated over every one of them. Neither should lead in surfaces of any extent be soldered, or in any manner fastened at the edges, without being turned up so as to make sufficient allowance for the expansion and contraction which it is constantly undergoing during the various changes in the temperature of the atmosphere. It may be taken, indeed, as a general rule, that solder should be dispensed with as much as possible. Like glue to the joiner, it is indispensable in many cases; but like glue also, it is in common practice made to cover many defects, and much bad work, that ought not to exist.

Sheet lead, whether cast or milled, is supplied of various weight or thickness; and it is always described as of such a weight in pounds to the superficial foot. This varies from four to ten or twelve, so that the weight to the foot being ascertained, the whole weight of any quantity of the same thickness may be determined by admeasurement. There are very few purposes, indeed, in building, in which lead of less than six pounds to the foot should be used, and very few in which the weight need to exceed ten. For roofs, flats, and gutters, under ordinary circumstances, eight-pounds lead is a very fair and sufficient average; for hips and ridges, lead of six pounds to the foot is thick enough; and for flashings five-

pound lead need not be objected to. Cast lead is to be preferred for the former purposes, because its surface is harder, and it is somewhat less susceptible of meteoric vicissitudes than milled; but the latter bends better, and, presenting a neater appearance, may be preferred for hips, ridges, flushings, &c. As the sheets are generally made of limited length and breadth, the cast being about sixteen or eighteen feet, and the milled from the latter dimension to twenty-five feet in length, and the one and the other seldom exceeding six feet wide, to avoid soldering, the lateral joints are made on rolls, and longitudinally in falls or drips. A roll is a piece of wood made about two inches thick and two or three inches wide, rounded on one edge, and fixed with that edge uppermost, so as to come a few inches within the width of a sheet of lead, that the edges may be turned up and folded round and over it, being lapped by, or lapping the similar edge of the adjoining sheet, (Fig. 37.) Lead sufficiently stout, dressed neatly and closely down to the boards under it, and over the rolls at its edges, will require no fastening of any kind, unless it lie on a very inclined plane, and have no stop below. Rolls occur for the most part in roofs and flats, and drips principally in gutters. The drip is formed in the first instance by the carpenter in laying the gutter boards according to an arrangement with the plumber. It is a difference made in the height of the gutter of about three inches, where one sheet terminates in length, and meets another in continuation. The end of the lower is turned up against the drip, and that of the upper is dressed down over it, so as effectually to prevent water from driving under it. Gutters should have a current of at least a quarter of an inch to the foot, and in flats it should not be much less; ends and sides which are against a wall should turn up against it from five to seven inches, according to the circumstances; and the turning up under the slates, tiles, or other roof covering, to a gutter, should be to the level of that against the wall at the least. The turning up against the wall should be covered by a flashing. This is a piece of lead let into one of the joints of the wall above the edge of the gutter lead, and dressed neatly down over, to prevent water from getting in behind it. (Fig. 36.) Lead on ridges and hips not being in sufficient masses to be secured by its own weight, must be secured by nails.

In making cisterns and reservoirs, unless they be cast, the sheets of lead must of necessity be joined by soldering; but the water they are intended to contain protects the lead from the frequent and sudden changes it is in the other more exposed situations subjected to.

Water trunks and pipes are made of a certain number of pounds weight to the yard in length, to every variety of bore or calibre that can be required. Water trunks or pipes are fitted with large case heads above, to receive the water from the gutter spouts, and with shoes to deliver the water below; they are fixed or attached to the walls of buildings with flanches of lead, which are secured by means of spike nails. Service and waste pipes to cisterns, &c. are generally supported and attached by means of iron holdfasts.

Plumbers' work is for the most part estimated by the hundredweight of a hundred and twelve pounds, though there are of course many things which must be taken in detail, by the pound weight, by number, and even by size. It has been already shown in what manner the quantity of lead consumed may be determined, whether it be in sheets or in pipes; the weight per superficial foot of the one, and per lineal foot or yard of the other, being known, and it is always ascertainable, the dimensions of the various parts or portions of the work readily give the total amount in hundredweights or tons. The waste of lead

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Building. in working is very trifling, as cuttings all go to the melting pot again with little or no loss but that of refounding or casting; and even old lead is taken by the lead merchant in exchange for new, at a very trifling allowance for tare and the cost of re-working. Water closet apparatus, pumps, cocks, bosses, ferules, washers, valves, balls, grates, traps, funnels, &c. can all readily be counted and noted according to their sizes and peculiarities; and so may the various requisite joints in pipes, and attachments of cocks, &c. to the pipes, which must also be taken in addition to the articles themselves. The prices of all these goods, from the sheets of lead and the pipes, to the smallest articles used by the plumber, may be ascertained from the wholesale merchants and manufacturers; an addition of thirty per cent. to these prime costs will, under ordinary circumstances, afford the builder or tradesman an ample profit, and payment, with sufficient profit on them also, for labour, solder, and nails, excepting cost of carriage, and any other contingent expense, which must be added to the gross. The materials may, however, be taken with a recognized profit added to the prime costs and the actual labour expended; and solder and nails worked up may be reckoned from observation, or account kept of the workmen's time, &c.

These things are mentioned more particularly, because a nefarious custom has obtained in this country, and is still allowed to a very great extent, by which the plumber is permitted to take not only an extortionate profit on his goods, but actually to charge twice for labour and the accessories. There is nothing more common than to find in a plumber's account a charge for lead (meaning sheet-lead) and labour, at so much per hundredweight,—charges for pipe of a certain bore or diameter at so much per foot,—for so many joints in pipe of such a size,—that is, for the labour and solder consumed and expended in making them,—and so on through all sorts of things, the account winding up at length, or being interspersed from time to time, with so many pounds or hundredweights of solder, and so many days' work of plumber and labourer! The now prevalent custom of artificers' work being done by general builders by tender and contract, has considerably lessened the injury to the public from this abuse, and proved it to be really so by the moderate profits the same men will content themselves with if they make a tender, who would persist in charging at the old rate if they were instructed to do the work without being bound by a contract. Such too is the effect of custom on the courts of justice in England, that the abuse referred to has been protected by them, and probably would be so still, because it was the custom and had been allowed!

Smith and Founder.—The goods supplied by the smith are charged by the pound according to the quantity of labour on them, and the founder has generally an average charge for iron castings at so much per hundredweight or per ton. The working up or fitting and fixing of iron-work devolves for the most part on the carpenter in whose favour it is taken, generally however, in combination with some of his own peculiar works.

Glazier.—The business of the glazier may be confined to the mere fitting and setting of glass; even the cutting of the plates up into squares being generally an independent art, requiring a degree of tact and judgment not necessarily possessed by the building artificer. (See the articles GLASS, Manufacture of, and GLASS-CUTTING.) The glazier is supplied with a diamond cutting tool, laths or straight-edges of various lengths, a square, a glazing-knife, a hacking-knife, hammer, duster, sash-tool, and rule; and his materials are simply glass, putty, and priming or paint.

The glass is supplied by the glass-cutter in squares or panes, of the sizes and qualities required for the parti-

cular work to be executed. The putty is made by the glazier himself or by a labourer, of fine clean powdered chalk or whitening, and linseed oil, well mixed and combined, and kneaded to the consistence of dough. No more putty should be made at once than is likely to be worked up in the course of a day, as, the oil drying out, it becomes hard and partially set, and is therefore less available for its purposes. Priming is a thin solution of white, with a little red, lead in linseed oil. When the sashes come to the glazier from the joiner, they have been fitted into their places, and only require to be glazed before they may be permanently set or hung. Supposing that no preliminary process is required, such as stopping (the result of bad joiner's work) and knotting (and knotty stuff should not be admitted in sashes), the sashes require to be primed. The priming is laid on every part of the sash except the outer edges of the styles and of the bottom and top rails, with the sash tool or painting brush, that is, if the sashes are intended to be painted; for if not, the rebates only must be primed. The object of this is to prepare the material of which the sash is composed for the reception of the putty, which would not otherwise attach itself so readily as it does after this preparation. The priming being sufficiently dry, the workman cuts the panes of glass down into their places, making every one fall readily into the rebates without binding in any part; indeed the glass should fit so nicely as not to touch the wood with its edges any where, and yet hardly allow a fine point to pass between it and the sash-bar or rebate, the object being to encase it completely in putty, and yet that the putty should not be in greater quantity than is absolutely necessary. The glass being fitted or cut down, the workman takes the glazing-knife in his right hand, and a lump of putty in the palm of his left, the sash being laid on its face, that is, with the rebates upward, before him; with the knife he lays a complete bedding of putty on the returning narrow stops of the rebates, all round to every pane. This being done, the panes of glass are put in on it as they have been fitted, and every one is carefully rubbed down with the fingers, forcing the putty out below and around the edges of the glass, until they are nearly brought into contact with the wood or other material of the sash. The rebates are then filled in with putty behind, the mass forming exactly a right-angled triangle, its base being the extent of the stop of the rebate, and its perpendicular the depth from the glass to the outer edge of the rebate; the third side or hypotenuse is neatly smoothed off, and the sash being then turned on its edge and held uprightly by the left hand, the protruded putty of the bedding is struck off with the knife, and the section of it neatly drawn. The sashes are now deposited on their faces, to allow the putty to set, and then they may be hung and painted. To very large squares, and to plate-glass, small tacks or spuds are used; but it is much better to do without them if prudence will permit it.

Lead-work, as it is termed, is the glazing of frames rather than of sashes with small squares or quarries of glass, which are held together by reticulations of lead; and these are secured to stout metal bars, which are fixed to the window frames. The leaden reticulating bars are grooved on their edges to receive the quarries, and are tied by means of leaden ribands or wires to the saddle bars, which, in their turn, are affixed to the stouter bars before mentioned, if the bay or frame be so large as to require both.

Glazing is valued by the superficial foot, the squares or panes being measured between the rebates in which they are set. The value of plate-glass is very much affected by the sizes of the panes, every additional inch in extent of surface adding materially to the cost of production of the whole piece or plate; it must therefore be carefully

Building. noted according to its magnitude. Common window glass is divided into best, seconds, and thirds, and is charged higher as the panes increase in size, because for large panes the table cuts to waste more than in cutting small ones. In ordinary practice, panes containing two superficial feet and under are classed together; then from two feet to two feet six inches, and so on; and according to the quality of the article. Flattening, bending, grinding, staining, &c. are all subjects of separate and independent charge.

Lead lights are taken by the superficies generally of a hundred feet, lead and glass being included in the same charge, which, however, depends on the size of the quarries. Stay and saddle bars are taken separately, according to their number and magnitude.

Painter.—The processes of economical painting will be found described in an article under the head PAINTING. The real object of painting is to protect wood, metals, and stuccoes from being readily acted upon by the atmosphere, by covering their surfaces with a material which is capable of resisting it. A continued succession of moisture and dryness, and of heat and cold, soon effects the decomposition of woods, causes oxidation in most of the metals used for economical purposes, and destroys the generality of stuccoes if their surfaces be exposed nakedly to it. A solution of ceruse or white lead in linseed oil spread over them prevents these injuries in a great measure, and for a considerable period of time; and as the application of such an unction can be repeated without much trouble or expense as often as occasion may require, it may be said to furnish a protection against the cited contingencies. In addition to the utility of painting, it is also available as an ornament, by bringing disagreeably or diversely coloured surfaces to a pleasing and uniform tint, or by diversifying a disagreeable monotony of tint, to suit the taste and fancy; and this is done in a great measure by the addition of various pigments to the solution before mentioned.

The painter works with hog's bristle brushes of various sizes, which, with the exception of pots to hold his colours, a grinding stone and grinder or muller for grinding or triturating them, a pallet and a pallet knife, are almost his only implements. His materials are comparatively few also; but for some purposes these require a great variety of ingredients, the preparation and combination of which, however, devolves principally on the manufacturer or colourman, and not on the painter himself.

The first thing the workman has to attend to in painting wood-work, is to prepare its surface for the reception of paint, by counteracting the effect of any thing that may tend to prevent it from becoming identified with the material. Thus, in painting pine woods of any kind, the resin contained in the knots which appear on the surface must be neutralized, or a blemish will appear in the finished work over every resinous part. Inequalities or unevennesses of surface, too, must be reduced with sand-paper or pumice-stone, or made up with putty. The necessary process for killing knots, just referred to, will generally leave a film, which must be rubbed down; and the heads of nails and brads having been punched in, will present indentations, which should be stopped. In painting or laying on the colour, the brush must be constantly at right angles to the face of the work, only the ends of the hairs, in fact, touching it, for in this manner the paint is at the same time forced into the pores of the wood and distributed equally over the surface; for if the brush be held obliquely to the work, it will leave the paint in thick masses wherever it is first applied after being dipped for

a fresh supply into the pot, and the surface will be daubed but not painted. Painting, when properly executed, will not present a shining, smooth, and glossy appearance, as if it formed a film or skin, but will show a fine and regular grain, as if the surface were natural, or had received a mere stain without destroying the original texture. Imitative grainings, however, and the varnishes which are intended to protect them, and make them bear out, necessarily produce a new and artificial texture; and for this reason they are all to a greater or less extent disagreeable, how well soever the imitations may be effected.

As it must be presumed that all the wood submitted to the operations of the painter, which has passed through the hands of the joiner, was already well seasoned and properly dry, it is only necessary to say generally, that work should be free from moisture of any and every kind before paint is applied to it, or it will at the least prove useless, and probably injurious rather than beneficial. This remark applies alike to wood and to plastered work, both internal and external; that is, whether they be subjected to the more violent changes of the weather or not. Dampness or moisture in woods, and stopped in or covered up with paint, will, under ordinary circumstances, tend to their destruction; and in stuccoes it will spoil the paint, and most probably injure the plastering itself too.

Painters' work, on extended surfaces, is valued by the yard superficial, according to the number of coats, or the number of times the paint has been applied to the surface, and to the manner in which, and matter with which, it is finished. On skirtings, surbases, narrow cornices, reveals, single mouldings, sills, string courses, &c. it is measured by the foot run; sash-frames and the squares or panes of sashes are numbered, the latter by the dozen; and so are other things which do not readily admit of being measured. Rich cornices, expensive imitations, &c. are taken by the foot superficial; and preparations before the work can be commenced are most fairly charged for by the time they occupy and the materials they consume. The work is taken as one, two, three, four, or more times in oil, common colour; or so many times finished of a certain colour that is more expensive than what is called common; or as so many times, and flatted of such a colour, the flattening being an extra coat; or as painted so many times, and grained and varnished. Common colours are those which are produced by the addition of lamp-black, red-lead, or any of the common ochres to white-lead and oil; blues, greens, rich reds, pinks, and yellows, &c. being more costly, are taken as such. Unflatted white is a common colour; flatted, it classes with the rich colours. If the same surface be painted of two different tints, it is said to be in party colours, and an allowance is made in the price for the additional trouble of finishing in that manner. Carved mouldings and other enrichments having to be picked in with a pencil or small brush, that the quirks, &c. be not choked up, must be taken extra, by the run or by number; and if the picking in be in party colours, the labour is necessarily greater than if the work be plain.

What is termed decorating, is divided between the painter and the paper-hanger. Decorations must necessarily depend upon the taste and skill required or employed in producing them; and the remuneration must also of course be contingent. Decorative papers are paid for by the piece or yard, a piece being made in this country twelve yards long and twenty inches wide, and the hanging is charged at so much the piece. Borders are charged by the yard for the material, and by the dozen for hanging. Sizing and otherwise preparing the walls are considered extra to the charges for hanging. (H. H.)

Building.

Builth
||
Bukharia.

BUILTH, or **BUALTH**, a market-town in the county of Brecknock, in South Wales, 177 miles from London. It has little trade, and only a small market on Saturday. The inhabitants amounted in 1801 to 677, in 1811 to 815, and in 1821 to 946.

BUKHARIA, **BUKHARA**, or **BOCKHARA**, an extensive region of Asia, in Usbeck or Independent Tartary. We have no data to define the exact limits of this country, which vary in extent, as in most Asiatic states, according to its power. The habitable part of the country is small in proportion to the desert by which it is mostly surrounded, and which may be considered as in a great measure its boundary. It is divided in this manner from Khyvah or Khaurezm on the west and north-west; to the north and north-west stretch vast tracts of desert, thinly sprinkled with the tents of the Toorkoman and other barbarous tribes, and only interrupted by the Jaxartes or Sihoon; upon the east it is bounded by Kokaun or Ferghanah, and Hissar; and the Oxus, with the mountains from which it flows, may be said to form a rude boundary to the south. The country extends, according to the best estimate that can be obtained, about seven hundred miles from north to south, and three hundred and fifty from east to west. But we are greatly in want of accurate information concerning its extent, and, according to the different theories of geographers, large districts are either withdrawn from or annexed to it. We know but little of the nature of the country, further than that a great part of it is a flat and sandy desert, though it contains large tracts which are fertile and well cultivated. It is watered by the Sihoon or Jaxartes on the north, and by the Amu or Oxus on the south; and there is a vague report that a lake called Taran lies in the central districts. The country near the city of Bukharia is described as in a high state of cultivation, and thickly studded with well-inhabited villages for forty miles around. Beyond the circle of cultivation commences an arid desert, which surrounds on every side the fertile spot in which Bukharia is situated. Towards the south-east, as the country approaches the great Himalaya range, and the sources of the two great rivers between which it lies, it is rugged and mountainous. Fraser, who during his residence in Persia collected the most satisfactory and recent information which we possess respecting Bukharia, mentions that in this quarter there is a mountain abounding in gold, which being washed down by the torrents, is intercepted along with the sand by means of sheep-skins placed in the water; the metal is extracted by amalgamation with quicksilver, which is evaporated by heat, leaving the gold in a pure state. Silver is also found, but in what manner is not known. Many other valuable products are enumerated, among which are rubies, lapis lazuli, and marble. About a hundred and fifty miles due east from the city of Bukharia lies the celebrated city of Samarcand, now presenting a heap of ruins. The first two days' journey is, for about sixty miles, through a succession of villages, gardens, and cultivation, to Karmina, a large and populous village; the third to Zea-o-Deen, a village; the fourth to Khet-e-Courgam, a considerable town; the fifth to Samarcand. Four days' journey south-east of Bukharia is the district and town of Karchee, of no great magnitude, and deficient in water. The country around produces little else than wheat and barley. About a hundred miles east of the capital, and separated from the open country by a chain of low hills, lies the town of Kheish or Sheher-c-Subz. This district is said to be blessed with a fine climate and an abundant supply of water. It is verdant and richly wooded, interspersed with valleys that yield abundantly fruits and grain, and it contains many flourishing villages. The town of Kheish, which contains from twenty to thirty thousand inhabitants, and is sur-

rounded with fine gardens, displays, along with its environs, Bukharia. a beautiful combination of wood, water, and mountain scenery. The chief of this district is said to be only nominally dependent on Bukharia, to whose sovereign all the allegiance that he owes is to furnish a contingent of troops in case of need. There are several other districts nominally dependent on the sovereign of Bukharia; namely, the district of Ooratuppeh, eleven days' journey or three hundred and thirty miles east-north-east of Bukharia; and the district of Hissar at the same distance, in a direction east-south-east. It is described as fertile and well watered; and its chief town, Deh No, is large and populous.

Bukharia being an elevated table land, its climate is modified by the height of the ground; and in winter the cold is severe. The rivers are frozen over, and remain in that condition for about three months; and even the great Oxus is passable for caravans. During all this period the wind is dry and piercingly cold, and the ground is covered with snow. Light rains are common during the three months of spring, every three or four days, from the west. In summer the wind generally blows from the north-west, and is frequently scorching, especially during the first two months of summer. Bukharia is without the range of the tropical rains, but there are light showers in summer; and in autumn heavy rains set in from the west.

Such parts of the country as are not desert are fertile, and yield two crops in the year, one in spring, the other in autumn. The spring crop consists of a species of wheat and barley, jowarree, and various other grains; cotton, madder, with sweet and water melons, cucumbers, &c. The autumn crop consists of another species of wheat and barley, which are chiefly reaped at this season, and a little jowarree. Besides the moisture derived from the heavens, the fields in the spring are watered from wells by means of Persian wheels; and during the autumn by water-courses, which are supplied by embanking the streams of rivers. Bukharia yields a variety of excellent fruits, such as apples, pears, quinces, plums, peaches, apricots, cherries, figs, pomegranates, mulberries, grapes, melons, &c. The musk melons especially are mentioned as remarkable for size and flavour, often weighing twenty pounds, and being fresh and good for eight months in the year.

The population of Bukharia consists of the Oosbecks or Usbecks, a Tartar tribe; the Taujiks, a race widely diffused over all those countries; and the Toorkomans, of various tribes. Of these the Usbecks are by far the most numerous, in the towns and villages as well as in the tents of the desert. They are for the most part of a short and stout make, their complexion is clear and ruddy, with the hair thick and the beard thin, a broad forehead, high cheek bones, and small eyes. Their dress consists in summer of a cotton shirt and drawers, and in winter of a woollen shirt, over which they throw a silk or woollen wrapping gown, tied round the waist with a girdle. In cold weather they wrap themselves in sheep-skin, or in a coat of thick felt. In summer they wear a painted cap of silk; in winter one of broad cloth lined with fur. Bandages of cloth are rolled round the legs instead of stockings, and boots are in general use. The women wear a pair of trousers and shift of silk or cotton, and over this is thrown a robe like that of the men; the dress of both sexes being very similar. The Usbecks who dwell in the tents live in parties of from two hundred to a thousand families; each of these tribes has a ruler or chief, chosen by common consent, who adjusts all disputes, and acts in the capacity of judge. In serious matters, two or three chiefs are called to decide; and if they cannot agree, they refer the matter to the cauze, an officer appointed by the king, and held in general awe. The chief or the beg collects the revenue, which

Bukharia. he pays to the king's officer or aumil, who is sent to him to receive the sheep, camels, oxen, or other animals that are due, in the proportion of one in forty, from the flocks or herds of the desert; a price is then fixed on them, which is paid in money to the king's officer. All these tribes are in perfect subjection to the king, who discourages the confederacy of large tribes, and even directly prevents it. In the towns the women never appear without veils; but among the wandering tribes they have no such concealment, and with their faces uncovered they carry on all their usual domestic occupations of working, making clothes, cooking, carrying water, &c. Fraser, during his residence in Persia, received from all those with whom he conversed, very favourable impressions of the Usbecks of Bukharia. They are said, he observes, "to be honest, just, sincere, good tempered, generally well disposed, and by no means either cruel or treacherous;" to be less given to quarrels and murderous revenge than their neighbours, less stained with foul crimes and profligacy, to be hospitable and kind; and the same traveller adds, "from what I have heard, strangers, after passing through the dangers of their frontier, would probably be well treated, and secure." Several facts, however, which are stated by Mr Fraser do not certainly agree with this favourable character. Among these he relates an adventure of a native of Kabooshan who went to Bukharia on business, and who, being suspected by the king, was called before him and questioned; but attempting to disguise his real character, he was seized as an impostor, and thrown into prison, where he was nearly starved to death, and was at last taken out and sold in the public market as a slave. He retained his clothes, in which he had sewed a sum of money, with which he afterwards purchased his freedom, and returned to his own country, where he told the story to Mr Fraser. With regard also to the purity of their morals, several persons, who had good opportunities of knowing, informed him that the most odious vices were practised, even more openly than in Persia. To Europeans all access to these countries is denied by the intolerance of the people, who would insult them, and probably put them to death, or sell them for slaves. They evince the same hatred of the Mahommedans who differ from them; and they are at constant war with the Sheahs (they themselves being zealous Soonies), whom they make no scruple, and even think it praiseworthy, to sell for slaves. The Usbecks, true to their Tartar origin, delight in war, and pride themselves in being the bravest and most robust of the Tartar race. Some say they are fond of horse flesh; but this is denied. There is no doubt, however, of their fondness for the national drink, called kimmiz, an intoxicating liquor prepared from mare's milk by shaking it violently in a skin for several hours. They are also fond of tea. They are patient of hunger, thirst, and fatigue, and are renowned for their activity in predatory war.

Of the Taujiks the origin is not known. They are widely diffused, however, over all the countries of the East, and are generally distinguished from the various races of Tartars by their commercial, industrious, and pacific habits, and by their residence in cities and in fixed habitations rather than in tents. The Taujiks are all engaged in commerce, being either merchants, tradesmen, or mechanics; but they are described as being dissolute and corrupt. They bear a small proportion in Bukharia to the Usbecks, from whom they differ in appearance and features, being of ordinary stature, and fair complexion, with black expressive eyes, a hawk nose, well-shaped face, fine black hair, and thick beards. The Toorkomans, who are wandering Tartars, ferocious and warlike in their habits, and divided into a variety of tribes, form a very scattered population. They inhabit chiefly the banks of the Oxus,

and the fertile spots scattered throughout the desert; but they are also to be found in greater or smaller numbers all over the more fruitful and well-watered country to the south and south-east of Bukharia.

The government of this country, as of most countries in Asia, is a despotic monarchy, in which the king is perfectly absolute, the fountain of all authority and power. The ulema and heads of religion alone have influence to control him; and these the present monarch, Shah Hyder, has brought under his power, and he has even put some of the most highly esteemed among them to death without the smallest disturbance. They hold, however, the first rank in the state. One class of these priests claim their descent from the caliph Abubekr, and are accounted the greatest among these holy personages; while they derive so much weight from their wealth and their extensive possessions, that they have been in some measure considered as independent of the king. But they do not enjoy the first rank among the ecclesiastics. That distinction belongs to an officer, the head of another class, who sits on his majesty's right hand, on an elevated seat; and after him come the chief cauzees and muftis, with the rest of the ulema or priestly order. The omrahs, or nobles belonging to the army, only occupy the second rank before the king, sitting on his left hand; and the first of them is the commander-in-chief, followed by his officers in their respective ranks. Then come the civil functionaries and confidential slaves, according to their offices. The king's treasurer, who has the highest rank of any civil officer, stands always in front of the throne. In its arrangements the court is said to resemble that of Afghanistan, but to be far more splendid, the officers wearing rich gold brocade, and embroidered broad-cloth dresses, but no jewels.

Bukharia and the cultivated country around is divided into seven districts, each district containing many villages, and each village having its separate system of government. The chief authority in the district is in the elder or president, chosen by the inhabitants for his respectability, wisdom, and learning. His office is permanent, and indeed is commonly hereditary. His business is to decide in all disputes, to collect the revenue, and to levy the militia; and he is aided in these matters by inferior officers, chosen, as he is himself, by the people. The sovereign of the country is, however, the chief judge; and when he attends to his duties, and dispenses justice with impartiality, his example is copied in all the other departments of his government, and there is less occasion to employ delegates of high rank. But all depends on the personal character of the king, and when he is negligent and corrupt, similar evils run through every branch of the public administration. In these rude and lawless countries life and property are not secured, as in Europe, by permanent institutions; the inclinations and passions of the monarch form the only rule of his conduct; and where the people are not plundered and oppressed, they owe this immunity from outrage, not to the protection of fixed laws, but to the gracious dispositions of the reigning sovereign.

The public revenue arises from a tax on land, which amounts to a tithe of the produce; a tax of one fortieth on flocks, money, and other movables; and a custom duty, which amounts to a fortieth, on the entrance and exit of all goods. There is a capitation tax also on all inhabitants who are not of the Mahommedan faith, of from sixpence to two shillings a head. Of the amount of the revenue derived from these various sources we have no account that can be depended on. It is expended by the king in the maintenance of the army, on the priesthood, including benefactions to religious, charitable, and learned institutions, and all other contingencies of government. His own expenses are supplied from the capitation tax. Va-

Bukharia. rious accounts are given of the military establishment of Bukharia, and of the number of the troops. By some writers they have been estimated at a hundred thousand, by others so low as thirty thousand; but this discrepancy may be accounted for by supposing the one number to apply to the troops which may be called out in cases of emergency, and the other to the troops which are kept always in readiness. The army consists entirely of cavalry, who are armed with a very long lance, a sword, and a shield: a certain number, probably a third, have matchlocks; and they all wear long knives and daggers at the waist.

Bukharia is an entrepôt of the general trade which is carried on between the east and the west of Asia; and as it enjoys peace and security under the equitable administration of its present monarch, Shah Hyder, its trade is extensive, and a regular intercourse is maintained with Russia by the way of Orenburg, with Persia through Mushed, with Herat, Cabul, Peshawer, Shikarpore, Buduckshan, Cashmere, China, and all the countries which depend on them. Two caravans pass every year between Russia and Bukharia, consisting of from four to five thousand camels each. Russia sends into Asia iron, steel, copper, brass, quicksilver, hardware, plated goods, gold and silver embroidery; furs, broad cloths, white and coloured cotton manufactured goods, cochineal, refined sugar, paper, and a variety of such articles. The exports from Bukharia are black lamb-skins, certain manufactures of cotton and silk, lapis lazuli, rubies from Buduckshan, torquises from Persia, antique gems, coins, medals, and various other antique utensils, and arms. These latter articles are found among the ruins of the ancient cities which formerly flourished in this country. The extensive ruins of one city, Khojahwooban, lie buried under sand, in which it is the practice to dig after rain, when many articles of value are found, particularly plate, utensils of gold and silver, all which are eagerly purchased by the Russian merchants, who give for them five times their weight, and an exorbitant price for carved gems, both cameos and intaglios, some of which are of extraordinary beauty. Four or five guineas each were asked from Fraser while he was in Persia for oval stones of cornelian, garnet, and sardonyx, on which figures were cut, some of which exceeded five-eighths of an inch in length; and the same traveller mentions, that for a sardonyx cameo about an inch and a half long by an inch broad, bearing the head and shoulders of a queen, exquisitely cut, L.700 or L.800 were refused by a Persian virtuoso. Bukharia imports from Persia the shawls and woollen goods of Kerman, and the silk stuffs of Yezd and Ispahan; from the latter place also gold and silver embroidery, copper-ware, and other articles; from Cashan, Hamadan leather, loaf, candy, and raw sugar. Besides their own productions of lamb-skins, cloth made of camels' hair, coarse coloured silk handkerchiefs, tobacco, &c. they send the indigo, cochineal, chintzes, and cotton manufactures of India. From Cabul, Peshawer, and Shikarpore, and the countries which lie to the south and east, Bukharia receives wool, turbans, white cotton cloth, chintz, sugar in all shapes, yellow stick for dye, spices, black pepper, &c. The returns are made in horses, copper, silk vests and cloth, and various other manufactures; plated and gilt copper wire imported from Russia; silk and silk stuffs, tea and China ware. From Kashgar, Yarkund, and the countries on the side of China, are brought large quantities of tea, China ware, and all the productions of China; and the articles exported are the same as those already enumerated. Bukharia carries on an extensive trade in horses, for which, outside the capital, there is a market every Saturday, Monday, and Thursday. They are exported in considerable numbers to Afghanistan, whence they find their way

to India. These horses of Bukharia, though they are strong, and well enough suited to the country, are far inferior to the Persian and Toorkoman breeds. They have a very large and powerful breed of asses, which are greatly valued for the road. The currency of this country consists of tillas, a gold coin worth ten shillings and sixpence, and of tenges, a silver coin, value sixpence. Bills of exchange are not common, nor are they well understood; and when an order is given by a merchant or his agent at a distant place, a rate of exchange is exacted of from twenty to twenty-five per cent.

Bukharia was known to the ancients under the name of Sogdiana; and was too far removed to the east ever to be brought under the wide-spreading dominion of Rome. But it has shared deeply in all the various and bloody revolutions of Asia. It is mentioned by the earliest historical writers of Persia; and, about the year 856, Yacoob-bin-Leis is said to have been invested with the government of that province by the caliph. About twenty years after, it was conquered by Ismael, the first sovereign of the Sassanian dynasty, whose successors held it until the renowned Malek Shah, third of the Seljook dynasty of Persia, passed the Oxus about the end of the eleventh century, and subdued the whole country watered by that river and the Jaxartes. In the year of the hejira 594, A. D. 1216, Bukharia was again subdued by the celebrated Mahomed Shah Khauresme, who enjoyed his conquest but a short time ere it was wrested from him by the irresistible power of Ghenghis Khan in A. D. 1220. The country was wasted by the fury of this savage conqueror; but recovered some share of its former prosperity under Octai Khan, his son, whose disposition was humane and benevolent. His posterity retained the dominion of this country until about the year 1500, when Tamerlane with his mighty host bore down every thing before him, and spread far and wide the terror of his arms. His descendants ruled in the country until about the year 1500, when it was overrun by the Usbeck Tartars, in whose possession it still remains. The present king claims his descent from Sheibahnee Khan, who reigned in Bukharia about the beginning of the sixteenth century, and who was a descendant of the great Ghenghis Khan. His dominion extended over the countries north and west of the Caspian, now subject to Russia; and being driven from these, he retreated to Bukharia, and extended his sway over Balk, Buduckshan, Herat, Merve, and Khaurezm. He was slain in a great battle with the Persian king, after a reign of twenty-two years; and was succeeded by his nephew Obeidoollah, who conquered part of Khorassan, including Mushed, where he committed great devastation, putting multitudes of the inhabitants to the sword. He was succeeded by his cousin Isander Khan, who reigned twelve years, in the course of which he is said to have built twelve hundred mosques, caravanserais, and water cisterns, for the convenience of travellers; and the latter was succeeded by Abdoola Khan, who reigned thirty years. His son Abdool-momen was deposed by the Omrahs after a reign of six months. His cousin Wulle Mahomed Khan succeeded, and reigned eighteen years, when he left the throne to his son Koolce Khan, who after a reign of sixteen years became blind, and resigning the kingdom to Seyed Nadir his half-brother, went on a pilgrimage to Mecca, where he died. Seyed Nadir reigned twenty-four years, and amassed great treasures. He had twelve sons, one of whom, Abdool Azeez, rebelled against him, and seized upon the throne; in consequence of which the father retired to Mecca, where he ended his days. Abdool Azeez, after reigning thirty years, first at Bukharia, and afterwards at Balk, resigned his throne to Koolce Khan, and, following the example of his father and uncle, retired to Mecca. His

Bukharia. brother reigned twenty-four years, and was succeeded by his youngest son, Obeidoola Khan, whilst his elder brother reigned at Balk. These two rival chiefs went to war, and were succeeded by their younger brother, Abool Feize Khan, who being of an indolent disposition, lost the greater part of his dominions. It was in his reign that Nadir Shah, in 1740, crossed the Oxus, and having advanced within three days' journey of the capital, sent messengers to demand of the king whether he meant to oppose his further progress. The king of Bukharia, sensible of his weakness, submitted to his clemency; and on being required to furnish a supply of provisions for his army, at the rate of two mauns of wheat and one of barley for every house in the capital, he sent the requisition according to the Bukharia measure, of which one maun is equal to sixty Persian mauns; with which Nadir Shah was so pleased, that he departed from his dominions, and confirmed the king on his throne. He was finally dethroned by Raheem Khan, a usurper, who, by his vigorous administration, restored order and tranquillity throughout his dominions; and dying without male issue, Dauniar Beg, his uncle, and a descendant of the royal stock, was raised by common consent to the throne. He was a weak prince, and was succeeded by his son Shah Murad, who by his capacity and talent extended his territories, on the one side to the Jaxartes, Jihon, Sihoon, or Seer river, and on the other beyond the Amoo or Oxus, reconquering Balk from the Afghans, and Merve from its Persian governor, which he destroyed, and it has remained desolate ever since. He reigned sixteen years, and was succeeded by his son Shah Hyder, who now rules in Bukharia, and who is described as mild, pacific, unambitious, charitable, just, and religious even to bigotry. The above account of the rulers of Bukharia was received by Mr Fraser when he was at Mushed in 1822, from a hereditary historian of the family, in presence of the king's brother, then residing at Mushed. We have no data from which to form even a conjecture as to the population of Bukharia. The inhabitants are chiefly collected in the great towns and their dependent villages; and by Mr Irvine, who accompanied Mr Elphinstone in his embassy to Afghanistan, they are estimated at 3,600,000.

Fraser's *Narrative of a Journey into Khorassan*; Sir J. Malcolm's *History of Persia*; Kinneir's *Geographical Memoir of Persia*; Elphinstone's *Account of the Kingdom of Cabul and its Dependencies*.

(F.)

BUKHARIA, or BOKHARA, a large and opulent city, the capital of the above country, situated about twenty miles south-west of the Kohik, a tributary stream of the Oxus, from which river the city is distant about fifty miles. It occupies a rising ground, and is of very great extent; and though it is said to cover less ground within the walls than Ispahan, it contains only well-built and well-inhabited houses, without any intermixture of ruins. The houses are in general two, and even three stories high, built of raw brick, and often strengthened by wooden frame-work. Those of an inferior description are also constructed of frames of timber work, filled up with mud and fragments of brick. All are plastered over with a coat of lime cement, and many of them are handsomely decorated with painting, both inside and out. It is surrounded by a lofty wall of earth, faced and covered at the top with unburnt bricks, and having brick towers at certain distances from each other. The wall is not in good condition, and the earth has long been mouldering away; so that neither the wall nor towers could make any defence. The wall has twelve gates, from which a continuous line of bazars, with rows of houses and gardens, extends for ten or twelve miles into the country, the space inhabited without the walls greatly exceeding the space within. On the north-east of

the town stands a citadel, on an eminence, having sixteen guns and mortars, great and small, without carriages, lying on the ground; near it is a large well-built mosque, where the king himself, on Fridays, reads the service usually performed in the mosques, and acts as imaum. A market is held every day at noon before this mosque and citadel, where stands a gallows, on which murderers, highway robbers, and such as have robbed three times, are hanged by the king's orders. In the centre of the city is a large edifice, having a dome built of stone and lime, inside of which are four streets, one of them closed up at one end; and in it are all the shops of the booksellers. A market is held here every morning. There are, besides, several other bazars, which are chiefly roofed in from the weather, and numerous caravanserais for travellers. Bukharia has long been renowned among the eastern cities for its sanctity and learning, and it abounds in mosques and medressas or colleges beyond all other buildings. Among the former is still extant the mosque from which Ghenghis Khan harangued the people on his entrance into the city. There are about eighty colleges, chiefly built of stone, and containing from forty to two hundred and even three hundred chambers, each calculated to contain two students. These colleges are supported by the rents of land or of shops in the bazar, amounting to from one hundred to five thousand rupees a year. To build and to endow colleges is reckoned a pious work, and wealthy men contribute liberally to such objects; and they are also promoted by the king, who gives to them, out of the taxes, from five to fifteen tillas a month, each tilla being of the value of 10s. 6d. The city also contains numerous tombs of pious devotees, which are visited from religious motives, and some of which are richly endowed and highly decorated. The town is chiefly supplied with water from the river Kohik, which passing, as already mentioned, about twenty miles to the north-east of it, after leaving the hills near Samarcand, feeds several canals, that water the town and all the adjacent gardens. Once in fifteen days water is made to flow into the reservoirs of the town; and it is on this supply that the inhabitants depend, as there are no wells in the surrounding plain. The water is said, however, not to be wholesome; and after using it during the spring and summer months, sickness begins to prevail; the guinea worm in the skin is so common, that few escape it; fevers and complaints of the bowels are common; and though there are numerous practitioners, the science of medicine is at a low ebb, being chiefly followed by ignorant pretenders.

Bukharia is a great emporium of trade, and an entrepôt for the productions of China and the countries of Eastern Asia, as well as for those of Persia and Western Asia, which are respectively interchanged for each other. The account of its extent and population given to Fraser, to whom we are indebted for all our knowledge of this great eastern city, was, that it contained within the walls a hundred and twenty thousand houses; and that in the suburbs and immediate dependencies it contained as much more. "This," says Fraser, "may be a great exaggeration; but there is," he adds, "no doubt that this city contains a population far exceeding that of any other city in Asia which we know of, except Pekin and some others in China, and Calcutta, with one or two others in India."

This great city was taken by Ghenghis Khan in the year 1220; and that cruel conqueror, after giving to the inhabitants assurances of immunity and protection, on conditions which were very strictly fulfilled by them, being enraged at discovering that some officers belonging to the hostile army of Mahommed Shah had been protected by certain of the townsmen, their relations, gave up the city to fire and sword; and the greater part of its habitations being

Bukharia. built of brick, its destruction was complete. "The sun," says Fraser, "which rose upon its rich and crowded bazars and thickly inhabited edifices, went down at night upon a waste of smoking ashes, among which there was not one house standing except some mosques and public buildings, which being built of brick, survived the flames." The city was rebuilt by Octai Khan, the son of Ghenghis; and it gradually recovered its former prosperity, which it still retains. Long. 62. 45. E. Lat. 39. 27. N. (F.)

BUKHARIA, Little. This country, which is to the east of Great Bukharia, is very imperfectly known to Europeans. It lies amid deserts, and is bounded on the north by the country of the Kalmucks and Eygur; on the east by the desert of Kobi; on the south by the mountains of Thibet; and on the west by Great Bukharia. It is computed, but on no very satisfactory grounds, to extend seven hundred miles in length from east to west, and two hundred miles from north to south. It consists chiefly, according to the descriptions given of it, of one vast chain of mountains, with subordinate ridges diverging from it through sandy deserts. The plains are fertile, and among the mountains pleasant valleys are interspersed, watered by streams from the mountains. When this country was visited by the missionary Goetz in 1603, it was divided into two kingdoms, Kashgar to the west, and Kalis to the east. It was previously divided into four states, with very imperfectly defined boundaries. The Mahomedan states and cities of Kokaun, Khojend, Yarkund, and Kashgar, are contained within Little Bukharia. Kokaun is a city of modern date. Khojend, which is sixty miles west by south, is a city of great renown, built on the left bank of the Seer or Jaxartes. Kashgar, about six hundred miles east of Kokaun, is a great commercial resort, containing ten thousand houses. Yarkund, which is in east longitude 78. 27. E. and in latitude 38. 19. N., is a large and flourishing place, and the country around is described as fruitful and well watered. All this country was subdued by Ghenghis Khan in the beginning of the thirteenth century, and it devolved on his second son, Yakatay Khan. In 1550 Yarkund, Kashgar, Hissar, Aksoo, Kuchar, Toorban, Eelah, and others, were under the dominion of the Moguls, the descendants of Timur. In 1683 they were subdued by the Kalmuck Tartars, whose king resided at Eelah, and appointed governors over the other cities. Previous to this revolution, the chief influence in the country was possessed by certain lords or great men, called Kaujahs, consisting of two classes, namely, the Aktaglick and Karataglick. The Kalmucks, the rulers of the country, being wasted by a plague that broke out among them, the Aktaglick Kaujahs rose up in arms against them, and after, as is probable, exterminating them, they fell upon the Karataglicks, expelled them from the kingdom, and seized on the supreme power. At this season they put to death an ambassador who chanced to arrive from the khan of Khatay, the emperor of China, Kien Long. Incensed by this insult, the Chinese monarch invaded the country with a large army. Being joined by the adverse faction of the nobility, he, after many severe conflicts, prevailed against the Aktaglicks, who were mostly destroyed; and ever since that period, which was in the year 1759, the country has remained under the dominion of the Chinese.

Mr Fraser, when he was at Mushed, conversed with many intelligent merchants, and among these with one Hussun Mervee, who had repeatedly travelled through those countries; and they all concur in the same representation of the peace and happiness which they enjoy under the active police of the Chinese government. The moment a traveller or merchant enters their dominions, an account is taken of his person, equipage, and goods, and dispatched by an express on the road through which he is

to travel. By this he is recognised, and receives permission to pass along through the guards and watchmen, who are everywhere upon duty, and so vigilant, that if a traveller loses any thing on the road, he is sure to have it restored to him; and no disorders or robberies can take place without the instant pursuit, and generally the seizure and punishment, of the culprit. This account of the exact order which prevails throughout all parts of the Chinese territories was confirmed by the account of another well-informed merchant, Selim Beg, who declared that "the moment the limits of Bukharia are passed, a most important change is to be perceived in the manners of the people, and particularly among the Eels; all is peace and tranquillity; there is neither robbery nor pilfering; and there is perfect security even for the smallest parties, or for individuals. This security increases the nearer you approach the Chinese territories, and when once within these limits all risk ceases."

The Chinese derive a revenue in these conquered countries from two sources, namely, a tax on merchandise, and a species of monthly capitation tax, to which all males exceeding the age of twelve are subjected. This tax varies with the circumstances of the individual, from a halfpenny to fifteen or sixteen shillings. To each city is attached a Mahomedan judge and two Chinese collectors, all under the control of a chief, who resides at Kashgar, with various other inferior officers. (F.)

BUL, in the ancient Hebrew chronology, the eighth month of the ecclesiastical, and the second of the civil year. It has since been called *Marshewan*, and answers to our October.

BULAH, a large village of Upper Egypt, two miles to the west of Cairo, to which city it serves as a harbour. It contains a custom-house, magazines, and a large bazar. Here the baths are very fine.

BULAM, or **BULAMA**. See **BISSAGOS**.

BULARCHUS, a Greek painter, the first who introduced, among the Greeks at least, different colours in the same picture. He flourished in 740 B. C.

BULB, a kind of large bud, generally produced under the ground, upon or near the root of certain herbaceous plants, hence denominated *bulbous*. See **ANATOMY**, **VEGETABLE**.

BULEUTÆ, in *Grecian Antiquity*, were magistrates answering to the decurions among the Romans. See **DECURIO**.

BULFINCH. See **ORNITHOLOGY**, *Index*.

BULGARIA, a province of European Turkey, extending from the mouth of the Danube, along that river till it meets the Timok above Widdin, on the borders of Servia. The Danube forms the whole of its northern, and the parallel chain of the Balkan its southern boundary. It is about three hundred and fifty miles long, extending from the Black Sea to Servia, by from forty to fifty broad.

This province was the *Mesia Inferior* of the Romans, and derives its present name from the Bulgarii or Bulgares, one of the northern hordes who abandoned their dreary plains to seek a more propitious climate in the south. They left the Wolga in the sixth century, and crossing the Danube near its mouth, established themselves in the inviting country which lies between that river and the mountains, extending westward from the shore of the Euxine. Here they defied all the efforts of the Greeks of the lower empire to dispossess them; and their various and sanguinary conflicts form a considerable portion of the history of that period. They carried on many contests with the emperors of the East; but in the eleventh century they were at length confined within certain limits, and the country was reduced to the state of a province. On the decline of the Greek empire, however, it was finally brought

Bulgaria. under the Turkish yoke by Bajazet, when the Turks had established themselves in the neighbouring province of Rumelia, the ancient Thrace.

The country, except in the neighbourhood of the Danube and the Euxine, is mountainous; but the sides of the smaller hills afford excellent pasture, and the soil is exceedingly rich and fertile. It is irrigated by a number of rivers and streams, the tributaries of the Danube. The climate is mild, and the productions accordingly are various and abundant. There is a profusion of grain, cattle, wine, wood, iron, &c.; and the province is looked upon by the Turks as the granary of Constantinople. The people have entirely laid aside the warlike character which distinguished their ancestors. The avocations of the greater number of them are pastoral, and their character corresponds with that which is always identified with this mode of life. Mr Walsh, the most recent traveller who has visited the province, gives the following graphic and interesting description of the appearance and character of the people. "Of all the peasantry I have ever met with," says he, "the Bulgarians seem the most simple, kind, and affectionate; forming a striking contrast with the rude and brutal Turks, who are mixed among them, but distinguished by the strongest traits of character. On the road we frequently met groups of both, always separate, but employed in the same avocations; the Turks were known by turbans, sashes, pistols, and yatigans; but still more by a ferocity of aspect, a rude assumption of demeanour, and a careless kind of contempt, that at once repulsed and disgusted us. They never turned their buffaloes or arubas out of the way to let us pass, or showed the smallest wish to be civil or obliging: on the contrary, they were pleased if they pushed us into a bog in the narrow road, or entangled us among trees or bushes. Any accommodation in houses was out of the question; if we approached one for a drink of milk or water, we ran the hazard of being stabbed or shot. The Bulgarians were distinguished by caps of brown sheepskin; jackets of cloth, made of the wool undyed of dark brown sheep, which their wives spin and weave; white cloth trousers, and sandals of raw leather, drawn under the sole, and laced with thongs over the instep; and they carried neither pistol or yatigan, nor any other weapon of offence; but they were still more distinguished by their countenance and demeanour. The first is open, artless, and benevolent; and the second is so kind and cordial, that every one we met seemed to welcome us as friends. Whenever their buffaloes or arubas stopped up the way, they were prompt to turn them aside; and whenever they saw us embarrassed, or obliged to get out of the road, they were eager to show us it was not their fault. Their houses were always open to us, and our presence was a kind of jubilee to the family; the compensation we gave scarcely deserved the name, and, I am disposed to think, if not offered, would not have been asked for. Turkish women we never saw; the Bulgarian women mixed freely with us in the domestic way, and treated us with the unsuspecting cordiality they would show to brothers. Their dress was neat, clean, and comfortable; it generally consisted of a jacket and petticoat of dark blue cloth, with a bright border of list round the edges or down the seams; and a shift of hemp and cotton, very large, hanging far below the petticoat, and gathered in full folds round the neck and arms, and worked or wove with lace-like borders. Married women wear handkerchiefs on their heads, with a long lapel hanging on the back behind; girls have their heads uncovered, with their hair braided and ornamented with different coins. All wear ear-rings, bracelets, and rings on their fingers, even girls of three and four years old, and all go barefooted. They are exceedingly industrious, and are never for a moment without their spindle and distaff;

they frequently asked for needles, and I greatly regretted I had not brought a few scissors and other female implements, which would have been highly acceptable to them. Their villages generally consist of forty or fifty houses, scattered without order or regularity. Their houses are built of wicker-work plastered, and are clean and comfortable on the inside."

The Bulgarians fabricate to a great extent several articles which are famous in Turkey; one is a coarse woolen cloth, and another rifle gun-barrels. But that which is most congenial to their rural habits is the preparation of the otto or attar of roses, a great part of which comes to England. Rose trees are very plentiful, and gardens are laid out for the purpose of cultivating them. The language of the people is a dialect of the Slavonian, and bears a resemblance to the Russian. Only a few elementary books have been printed in this language, and it has never been reduced to grammatical rules. The books introduced are in Greek, but that language has made no progress amongst the people, and the consequence is that they are entirely illiterate. Their religion is Christianity, which they embraced on their arrival in the district. They belong to the Greek church, subject to the Greek patriarch of Constantinople, who appoints their bishops. There is generally attached to every two or three villages a priest, who performs the duties of his vocation in each occasionally; but, unless in a very few places, they are destitute of churches, schools, and books. The principal towns, such as Sophia, Shumla, Ternevo, &c., will be described as they occur alphabetically.

The Bulgarians have extended themselves beyond the limits defined at the commencement. They have crossed the chain of mountains, and now occupy almost exclusively a considerable portion of Rumelia. They are gradually advancing, and in course of time, if their barbarous neighbours allow them to proceed, they are likely to cultivate the almost solitary desert which lies between the Balkan and the sea. The population of Bulgaria is estimated at about 1,800,000.

BULK OF A SHIP, the whole space in the hold for the stowage of goods.

BULK-HEADS are partitions made athwart the ship with boards, by which one part is divided from the other; as the great cabin, gun-room, bread-room, and several other divisions. The *bulk-head afore* is the partition between the fore-castle and gratings in the head.

BULKAU, a city in the Austrian province of the Lower Ens, and the circle of Marhartsberge, on a river of the same name, containing 301 houses, and three thousand one hundred and fifty inhabitants.

BULKH, or **BALK**. See **BALK**.

BULL, **DR JOHN**, a celebrated musician and composer, was born in Somersetshire about the year 1563. He received his education under Blitheman. In 1586 he was admitted at Oxford to the degree of bachelor of music, having practised in that faculty fourteen years; and in 1592 he was created doctor in the university of Cambridge. In 1591 he was appointed organist of the queen's chapel, in the room of his master, Blitheman.

Bull was the first Gresham professor of music, having been appointed to that station on the special recommendation of Queen Elizabeth. But however skilful he might be in his profession, he was not, it seems, able to read his lectures in Latin; and therefore, by a special provision in the ordinances respecting the Gresham professors, made in the year 1597, it is declared, that because Dr Bull was recommended to the office of music professor by the queen's most excellent majesty, his lectures should be permitted to be altogether English, so long as he should continue music professor there, he being unable to speak Latin.

Bull.

Dr Ward, who has given some particulars of Dr Bull, in his *Lives of the Gresham Professors*, relates, that upon the decease of Queen Elizabeth he became chief organist to King James, and had the honour of entertaining his majesty and Prince Henry at Merchant Tailors' Hall, with his performance on the organ. The same author states, that, in 1613, Bull quitted England and went to reside in the Netherlands, where he was admitted into the service of the archduke. Wood says that he died at Hamburg; others state that he died at Lubeck.

BULL, *George*, bishop of St David's, was born at Wells in 1634, and educated at Exeter College, Oxford. The first benefice he enjoyed was that of St George's near Bristol, from which he rose successively to be rector of Suddington in Gloucestershire, prebendary of Gloucester, archdeacon of Llandaff, and in 1705 bishop of St David's. This dignity he enjoyed about four years, and died in 1709. During the usurpation of Cromwell he adhered steadily, though still with great prudence, to the forms of the church of England; and in the reign of James II. preached very strenuously against the errors of popery. He wrote, 1, *A Defence of the Nicene Faith*; 2, *Apostolical Harmony*; 3, *Primitive Apostolical Tradition*; and other works.

BULL, among ecclesiastics, a letter written on parchment, sealed with lead, and issued by order of the pope, from the Roman rota or chancery. It is a kind of apostolical rescript or edict, and is chiefly in use in matters of justice or grace. If the former be the intention of the bull, the lead is hung by a hempen cord; if the latter, by a silken thread. It is this pendant lead or seal which is, properly speaking, the bull, and which is impressed on one side with the heads of St Peter and St Paul, and on the other with the name of the pope and the year of his pontificate. The bull is written in an old round Gothic character, and is divided into five parts, the narrative of the fact, the conception, the clause, the date, and the salutation, in which the pope styles himself *servus servorum*, or the servant of servants. These instruments, besides the lead appended to them, have a cross, with some texts of Scripture, or a religious motto, on it. Bulls are granted for the consecration of bishops, the promotion to benefices, the celebration of jubilees, and many other purposes.

BULL. See MAMMALIA, *Index*; also AGRICULTURE, *Index*.

BULL-Fighting, a sport or exercise much in vogue among the Spaniards and Portuguese, consisting in a kind of combat of a cavalier or torreador against a wild bull, either on foot or on horseback. This sport the Spaniards received from the Moors, among whom it was celebrated with great pomp. Some think that the Moors might have received the custom from the Romans, and the latter from the Greeks. Dr Plot is of opinion that the *ταυρομαχίαν* *ήμεγα* among the Thessalians, who first instituted this game, and of whom Julius Cæsar learned and brought it to Rome, were the origin both of the Spanish and Portuguese bull-fighting, and of the English bull-running. See SPAIN.

BULL-HEAD. See ICHTHYOLOGY, *Index*.

BULL in *Cæna Domini*, a particular bull read in the pope's presence every year, on the day of the Lord's Supper, or Maundy Thursday, and containing excommunications and anathemas against heretics, and all who disturb or oppose the jurisdiction of the holy see. After the reading of the bull, the pope throws a burning torch in the public place, to denote the thunder of this anathema.

Golden BULL, an edict or imperial constitution made by the Emperor Charles IV., and hence called Caroline, reputed to be the magna charta or the fundamental law of the German empire. It is called *golden*, because it has a golden seal, in the form of a pope's bull, tied with yel-

low and red cords of silk; while on one side the emperor is represented sitting on his throne, and on the other the capitol of Rome. Till the publication of the golden bull, the form and ceremony of the election of an emperor were unsettled, and the number of the electors was not fixed. This solemn edict regulated the functions, rights, privileges, and precedence of the electors. The original, which is in Latin, on vellum, is preserved at Francfort. This ordinance, containing thirty articles or chapters, was approved of by all the princes of the empire.

Silver BULLS were not in so frequent use, though instances of them are to be met with.

Leaden BULLS were sent by the emperors of Constantinople to patriarchs and princes; and they were also used by the grandees of the imperial court, as well as by the kings of France, Sicily, and other countries; and by bishops, patriarchs, and popes. It is to be observed that the leaden bulls of these last had, on one side, the name of the pope or bishop inscribed. According to Polydore Virgil, Pope Stephen III. was the first who used leaden bulls, about the year 772; but instances of them are to be met with as early as the times of Silvester, Leo I., and Gregory the Great. The latter popes, besides their own names, strike the figures of St Peter and St Paul on their bulls, a practice first introduced by Pope Paschal II. But why, in these bulls, the figure of St Paul is on the right, and that of St Peter on the left side, is a question which has occasioned many conjectures and disputes.

Waxen BULLS are said to have been first brought into England by the Normans. They were in frequent use among the Greek emperors, who thus sealed letters to their wives, mothers, and sons, and were of two sorts, one red and the other green.

BULLÆ, in antiquity, a kind of ornament much in use among the ancient Romans. Mr Whittaker (*History of Manchester*, vol. i. p. 79) is of opinion that they were originally formed of leather among all ranks of people; and it is certain that they continued so to the last among the commonalty. He also imagines that at first the bulla was intended as an amulet rather than an ornament; and in proof of this he mentions that the bullæ were frequently impressed with the figure of the sexual parts. It is universally asserted by the critics that the bullæ were made hollow for the reception of an amulet; but this Mr Whittaker contradicts, from the figure of a golden one found at Manchester, which had no aperture by which an amulet could have been introduced. Pliny refers the origin of the bulla to the elder Tarquin, who gave one along with the prætexta to his son, because at the age of fourteen he had with his own hand killed an enemy; and, in imitation of him, it was afterwards assumed by other patricians. Some, however, affirm that the bulla was given by that king to the sons of all the patricians who had borne civil offices; whilst others allege that Romulus first introduced the bulla, and gave it to Tullus Hostilius, the first child born after the rape of the Sabines. As to the form of the bullæ, they seem to be originally made in the shape of a heart; but they did not always retain this form, any more than they were always made of leather. As the wealth of the state and the riches of individuals increased, the young patrician distinguished himself by a bulla of gold, whilst the common people wore the amulet of their ancestors. When the youth arrived at fifteen years of age, they hung their bullæ round the necks of their gods lares. The bullæ were not only hung round the necks of young men, but also round those of horses, and were sometimes allowed even to statues; whence the phrase *statuæ bullatæ*.

BULLÆ was also the denomination given to divers other metallic ornaments made after the same form; and in this sense bullæ seems to include all gold and silver orna-

Bullæ ments of a roundish form, whether worn on the habits of men, the trappings of horses, or the like. Such were the decorations used by the ancients on their doors and belts. The bullæ of doors were a kind of large-headed nails fastened on the doors of the rich, and carefully brightened or polished. The doors of temples were sometimes adorned with golden bullæ.

BULLÆ also denotes a table hung up in the public courts, to distinguish which days were *fasti* and which *nefasti*, and therefore answering in some measure to our calendar.

BULLEYN, WILLIAM, a learned physician and botanist, was born in the Isle of Ely in the early part of the reign of Henry VIII., and educated at Cambridge. Botany being his favourite study, he travelled through various parts of England, Scotland, and Germany, chiefly with an intention to improve his knowledge in that science. In the reign of Edward VI. and of Queen Mary, Mr Bulleyn appears, from his remarks on the natural productions of that country, to have resided at Norwich, or in the neighbourhood; and also to have spent some time at Bloxhall in Suffolk; but he afterwards removed to the north, and settled at Durham, where he practised physic with considerable reputation and success. His great patron at this time was Sir Thomas Hilton, knight, baron of Hilton, and governor of Tinnmouth Castle in the reign of Philip and Mary. In 1560 he went to London, and soon after his arrival was accused by William Hilton of Bidick of having murdered his brother Sir Thomas, our author's friend and patron. He was arraigned before the Duke of Norfolk, and honourably acquitted. This Hilton afterwards hired some villains to assassinate the doctor; but the attempt proving ineffectual, he had him arrested on an action for debt, and sent to prison, where he remained for a long time. During this confinement Dr Bulleyn composed several of those works which established his reputation as a medical writer. He died in January 1576, and was buried in St Giles's, Cripplegate, in the same grave with his brother the divine, who had died thirteen years before, and in which John Fox the martyrologist was interred eleven years afterwards. Dr Bulleyn appears from his writings to have been well acquainted with the works of the ancient Greek, Roman, and Arabian physicians. He wrote, 1, *The Government of Health*, 1559, 8vo; 2, *A regimen against the Pleurisy*, 8vo, London 1562; 3, *Bulleyn's Bulwark of Defence against all Sickness, Soreness, and Wounds that doe daily assault Mankind*; London, printed by John Kingston, 1562, folio, including the *Government of Health*; 4, *A Dialogue both pleasant and pietifull, wherein is a goodlie regimen against the fever pestilence, with a consolation and comfort against death*; London, 1564, 8vo, 1569, 8vo. There is a wooden print of the author prefixed to the first edition of his *Government of Health*; also a small one, engraved by Stukeley in 1722.

BULLIALDUS (the latinized form of BOULLIAU, or BOUILLAUD), ISMAEL, an eminent astronomer, was born at Loudun in France in 1605. He travelled in his youth for the sake of improvement; and afterwards published several works, among which are the following, viz. 1, *De Natura Lucis*, 1638, 8vo; 2, *Philolaus*, 1639, 4to; 3, *Astronomia Philolaica, opus novum, in quo motus planetarum per novam et veram hypothesin demonstrantur*, Loudun, 1645, folio; 4, *Astronomiæ Philolaicæ Fundamenta clarius explicata et asserta adversus Zethi Wardi impugnationem*, 1657, 4to; 5, *De Lineis Spiralibus Demonstrationes*, 1657, 4to; 6, *Ad Astronomos Moneta duo*, 1667; 7, *Ptolemæi Tractatus de Judicandi Facultate*, 1667, 4to; 8, *Opus Novum ad Arithmeticam Infinitorum*, 1682, folio; and other works. He also wrote a piece or two upon geometry and arithmetic. In 1661 he paid Hevelius a visit at

Dantzic, for the sake of seeing his optical and astronomical apparatus. Afterwards he became a presbyter at Paris, and died there in 1694.

BULLINGER, HENRY, born at Bremgarten in Switzerland in 1504, was an eminent Zuinglian minister, a great supporter of the reformation, and one employed in many ecclesiastical negotiations. He composed a number of works, among which may be mentioned the *Chronicle of Zurich*, the *History of the Reformation*, and the *History of the Persecutions of the Church*. He died at Zurich in 1575.

BULLION, uncoined gold or silver in the mass. Those metals are so called, either when smelted from the native ore, and not perfectly refined, or when they are perfectly refined, but melted down in bars or ingots, or in any unwrought body, of any degree of fineness.

BUMM, a city of Persia, in the province of Kirman, of which it was the frontier town until the Afghans were expelled the country. It is situated in a plain in the vicinity of high mountains, usually if not always covered with snow. About twenty years prior to 1810 this city had been the scene of repeated contests; the Afghans, assisted by the neighbouring Beloches, frequently attempting the reduction of it, in retaliation for the inroads made into their country by the Persian troops. The fortifications are in consequence so greatly strengthened that they are now accounted the strongest in Persia. They have an elevated site, and consist of a very high and thick mud wall, a deep, broad, and dry ditch, with six large bastions on each face, exclusive of those at the corners, which are higher by many yards than the others. The whole is built of mud, mixed with straw and fibrous substances; and it has a gate between the two centre bastions on the southern face. On the most elevated part of the eminence on which the town is situated stands the citadel, well fortified with a lofty wall, and towers at each corner, and containing the governor's palace, and buildings belonging to it. Bumm is a very ancient, and was formerly a magnificent city, equal indeed to any in Persia; and the widely scattered ruins around the fort attest its former splendour and its immense extent. The town was greatly embellished by the Afghans, who invaded the country and made themselves masters of it in 1719. The fountains were magnificent; and some of them threw up water to an amazing height. The gardens were also very extensive; and Lieutenant Pottinger, when he visited this place, saw the remains of a garden, equal to several acres of ground, still retaining traces of having been walled in, with elegant summer-houses. The place is famed for its pomegranates, which are superior in flavour and juiciness to those of Sheeraz or Bagdad, where the best in the world are supposed to be produced. The bazar is large, and supplies are reasonable. Since 1719 it has undergone various revolutions; and it was here that Lootf Alleeckhan, the last of the Zund family who disputed the succession to the throne, was made prisoner, and put to death, about the year 1794. The spot where he was seized, when in the act of mounting his horse to escape, is still marked by a pyramid made of the skulls of his adherents, by order of his cruel competitor Agha Mahommed Khan Kajjar, the first of his family who reigned in Persia. Long. 58. E. Lat. 29. 17. N.

BUNDE, a circle in the Prussian government of Minden, extending over 125 square miles, containing 5308 houses, in two towns, ten villages, and forty-seven hamlets, inhabited by 35,370 persons. The chief place, of the same name, on the river Else, contains 1458 individuals, mostly occupied in spinning.

BUNDELCUND, or BANDELKHAND, an extensive district of the province of Allahabad, in Hindustan, between

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the rivers Cane and Betwah, occupying a superficies of about 11,000 square miles. The south-west frontier lies in about 24° north latitude, and 80° 45' east longitude, and the territory extends about two degrees farther north. In general the face of this country is mountainous, high, and rocky; its vegetation is scanty, and the inhabitants do not bestow much care on the cultivation of it. The summits of many of the hills, however, are covered with low copses, amidst which there is but little grass interspersed. Other parts of the district exhibit a close jungle; and there are portions, consisting of fertile soil, which are brought under suitable culture.

The most valuable of all fossils, diamonds, have been long found here, particularly near the town of Purna or Pannah. The mines producing them are situated in a range of hills called by the natives Bund-Ahill, extending above twenty miles in length by between two and three in breadth, and are said to be partitioned into twenty-one divisions; but we do not know that the whole belong to Bundelcund. Of these, the mines of Maharajepoor, Rajepoor, Kimmerah, and Guddasah, contain the finest diamonds; and one dug from the last has been reputed the largest in the world. It was kept in the fort of Callinger, among other treasures of Rajah Himmut Bahadur. Several different rajahs are proprietors of the mines, each having the charge of his own, without any interest in the produce of the rest. A superintendent is appointed to inspect the produce; and every diamond, when found, is registered, valued, and, if the rajah does not choose to keep it, is offered for sale. When sold, he receives two thirds of the value. In the reign of the emperor Acbar, the mines of Pannah produced to the amount of L.100,000 annually, and were then a considerable source of revenue; but for many years they have not been nearly so profitable, and it appears that about the year 1750 the government did not derive more from them than about L.50,000 per annum. Their present value is not exactly known. According to tradition, the mines were discovered by a fakir or religious mendicant.

The country at a distance from the mountains is agreeably diversified with clusters of eminences or small hills, separate from each other, exhibiting a picturesque appearance; and the inhabitants invariably build their villages at the bottom of a hill. They are seldom seen in any situation, and it is chiefly around the villages that the small quantity of grain raised in the district is cultivated. But Bundelcund not being a fertile country in itself, grain is brought from the banks of the Jumna and the Ganges. Many other commodities are supplied from the Deccan, or middle region of the peninsula; and large herds of bullocks are seen continually passing to the hilly part of the territory. The forests abound with tigers, and the nilgau or white-footed antelope, as also the wild boar, which are all hunted by the chief men of the country.

The inhabitants, who are called Bondelas, are a brave and warlike people, entertaining high notions of independence, and impatient of constraint or indignity. They act under the full impulse of those violent passions which sway the inhabitants of the East, and lead to catastrophes of a nature unknown to Europeans. An instance of this once occurred, when the fortress of Adjyghur, besieged by the British troops, was evacuated by the garrison. The removal of the family of the refractory zemindar who had occasioned hostilities having been directed, his father-in-law was desired to prepare the females of the family for it. Instead of doing so, however, he murdered the whole with their children, eight in number, and then put an end to his own existence. But what was still more extraordinary, the perpetration of this horrible deed was apparently with the consent of the sufferers, and without

any complaint from them. The Bondelas are either Brahmins or Rajpoots. About Diteah and Jhansi they are a stout and handsome race of men, exhibiting an appearance of opulence and contentment. They commonly go armed with a bow and spear, both of which are of excellent quality; and they know very well how to use them. They testify no apprehension in engaging veteran troops. Owing to the intestine commotions which long pervaded this district, every man carried arms; and many, availing themselves of superior force, attacked and plundered travellers, or levied contributions from them on pretence of guarding the passes which they had necessarily to traverse among the hills. Very little of their manners and customs is known. Women occasionally burn themselves along with the bodies of their deceased husbands, according to a remarkable religious principle diffused in the East, which now seems universally on the decline. The inhabitants dwell in towns and villages, of which the latter are much better than most others in India; and they have numerous strong forts, which they are accustomed to take and defend with determined vigour.

There are several considerable towns in the district, Chief towns such as Pannah, Pirna, or Purna, where the rajah resides, on account of its proximity to the diamond mines; Chatterpoor, Diteah, Callinger, Jyghthpoor, and Jhansi. Chatterpoor, thirty miles distant from Pannah, and six hundred and ninety-eight from Calcutta, is extensive and well built, the houses consisting chiefly of stone. Formerly it was in a flourishing condition, a place of great and active commercial transactions, and a kind of depôt for goods carried between the Deccan and Mirzapour, which is also in the province of Allahabad, and one of the principal trading towns of Hindustan. The goods were afterwards transported by numerous bullocks and camels to the places of their destination; and so much commerce was conducted here, that when Chatterpoor preserved its greatest importance, the duties levied amounted to L.50,000 yearly. It was founded by one of the rajahs of Bundelcund, and was occasionally his residence. Diteah or Dutteah is a large town, surrounded with a stone wall, and provided with gates. It extends a mile and a half in length by nearly as much in breadth, and is populous and well built, the houses being of stone, and covered with tiles. A spacious edifice, with seven cupolas, stands at the north-west extremity, and was the former residence of the rajahs; but a palace has recently been built for them on an eminence without the town, close to which is a considerable lake. The district of Diteah was tributary to the Mahrattas, and the rajah could raise two thousand horse and as many infantry, esteemed excellent troops. Some years ago they testified how much they were to be dreaded, in an engagement with the veteran forces under M. de Boyne, a famous French general in the Mahratta service, where all the skill and ability of the commander could scarcely preserve the latter from destruction. But among the most important places of Bundelcund is Callinger, the chief town of a subdivision of this district, which seems to have once been an independent government, and now includes ten pergunnahs or circles of villages. It has a fortification built on a lofty rock, of great extent, and is deemed impregnable by the natives. The walls are said to be six or seven miles in circuit; a hundred and seventy pieces of cannon are mounted on them, and a garrison of five thousand men is necessary for their defence. Nevertheless, its natural strength has enabled a smaller number to sustain long sieges; and the earlier invaders of Bundelcund have been compelled to retire, after unsuccessful blockades protracted during several years. So lately as the year 1810, the British army having attempted to take it by storm, was repulsed with great slaughter. However, the

Inhabit-
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garrison of this fortress, probably dreading a repetition of the assault, evacuated the place during the night. No fortress can be more secure against the irregular approaches of an Indian army. Here the rajah kept his military stores and treasure, and it was also the residence of the Europeans in his service. It is twenty or thirty miles from Pannah, and lies in $24^{\circ} 58'$ north latitude. Jhansi is a considerable town, but smaller than Diteah, commanded by a stone fort on a high hill in $25^{\circ} 31'$ north latitude, and thirty-two miles distant from Chatterpoor. There is a district dependent on the town, which, from having been seventy or eighty years in the uninterrupted possession of the peshwa or chief of the Mahrattas, is in a more tranquil state, and better cultivated, than most of the neighbouring territories, which have undergone frequent changes. Hence it is frequented by caravans from various commercial towns of India; and its wealth is augmented by a trade in cloths, and the manufacture of carpets, bows, arrows, and spears, the principal arms of the Bondela tribes. In the year 1790 it afforded a revenue of about L.50,000 annually. There is an ancient city called Ouncha, but now in decay, whose rajah was formerly the head of all the tribes of Bundelcund, and from whom their chiefs received tokens of their investiture. A castle which stands here, or in the neighbourhood, resembles a Gothic building, and is said to have been erected by a rajah of old, who in one day gave orders for building fifty-two forts. This may account for the places of strength seen in Bundelcund, for which the particular character of its surface is extremely favourable.

Besides these, there are several towns, villages, and fortifications of consequence in this district; but recent events have rendered the preservation of the latter of less importance to their owners.

From ancient times Bundelcund has been divided into many petty territories, whose chiefs have incessantly disturbed the peace of their subjects by predatory incursions on each other. The successful capture of strongholds in the mountains was an encouragement to the subsistence of warfare; and in addition to the numerous ordinary sources of dispute, it is not unlikely that their joint interests in the diamond mines contributed to excite dissension. Though the predominance of power induced some one of the contending parties to claim the superiority, it was reluctantly acknowledged by the rest; and hence, instead of a common bond of union to defend the country, it was weakened by the distractions of the whole. The rajahs of Callinger are mentioned by Mahomedan writers as early as the year 1008; but it does not appear to have been incorporated with Bundelcund for several centuries afterwards. Some time in the sixteenth century, it is said that a Bondela, living in Benares, removed to a fort in the district of Ouncha, then governed by a rajah, whose confidence he speedily obtained. This Bondela had a daughter of exquisite beauty, of whom the rajah became enamoured, and demanded her in marriage. But her father, considering the proposal as a grievous insult from one whom certain circumstances now unknown prompted him to regard as his inferior in rank, he, in concert with his daughter, plotted a diabolical revenge. Acquiescence was given on the part of both; and the rajah was invited by his bride to the house of the Bondela, where the ceremony was to be performed. Here a magnificent entertainment was prepared, of which he partook plentifully along with his attendants; but it was soon succeeded by excruciating tortures: poison had been treacherously administered; and when the victims became incapable of defence, they were barbarously massacred. The Bondela then placed himself on the musnud of the rajah, which he enjoyed peaceably until his death. He was succeeded

by his son Ber Sing Deo, whose descendant is the rajah of Ouncha; and he gained an accession of power by his services to the Soubahdar of Allahabad. But he is accused of being a great plunderer; and his history is stained by the assassination of the celebrated Abul Fazel, prime minister of Acbar, which is said to have been committed by a banditti under his command. Nay, it is affirmed that he acted in compliance with the wishes of Jehangeer, the emperor's son, who was jealous of Abul Fazel's influence over his father, and who, on his accession to the throne of Delhi, intrusted Ber Sing Deo with the government of all Bundelcund, then called Dungush. On descending to a later period, we find that this territory was invaded during the government of the rajah Chatter-saul, about the middle of last century, by the chief of Furruckabad; and the rajah, to aid him in repelling the enemy, applied for support to the peshwa, Sewai Bajerow. Success having attended them, he adopted Sewai Bajerow as his son, and partitioned Bundelcund between him and his own sons, allotting him a third of his dominions, the land revenue of which was estimated at about L.1,300,000 sterling, but under an express stipulation that his posterity should be protected by the peshwa in independent possession of the remainder. The rest of his male issue, said to exceed fifty, were in a state of dependence on their two brothers. In time this division opened the way to dissensions, a civil war ensued, and the consequent weakness of the chiefs afforded an opportunity for other invasions. Ali Bahauder, an illegitimate grandson of Bajerow, held a command in the army of Scindia, the noted Mahratta chief; and in the same army was the rajah Himmud Bahauder, who not only commanded a great body of cavalry, but was the spiritual head and military leader of a numerous sect of devotees called Gosseins. Both seem to have fallen under the displeasure of the peshwa; and the latter, after retiring to his estate in 1786, soon united with the other in attempting the conquest of Bundelcund. The rajah Himmud seems to have had it in contemplation to establish a sovereignty elsewhere; and about the year 1787 he was actively engaged in assisting the prince Mirza Jurvaim Buklit in raising an army; but the death of the latter, which happened suddenly in 1788, probably allowed him more leisure to attend to the other object in view. He and his associates agreed that a large portion of the territory to be conquered should be assigned to himself, and its revenue applied to the support of certain troops which he engaged to maintain in the service of Ali Bahauder. The projected invasion took place in 1789, when Ali Bahauder conquered much of the district in the name of the peshwa, of whom he rendered himself nearly independent; and in a short time the whole was subdued except some fortresses, which the Mahrattas have never been able to reduce.

Some years elapsed before the complete establishment of their authority; but an arrangement was made with the peshwa, whereby he was acknowledged lord paramount of all the conquests effected in Bundelcund by Ali Bahauder, who engaged to obey him as his sovereign, and to pay him tribute. But the latter contrived to evade both conditions; and, after being occupied fourteen years in endeavouring to subjugate the country, died in 1802, during the blockade of Callinger, which, during ten years, he had fruitlessly endeavoured to capture. Ali was succeeded by his eldest son, Shumshere Bahauder, then absent at Poonah; and Himmud Bahauder, who, to retain his own influence, had for years been exciting disaffection among the different chiefs, now appointed a relation of Shumshere, the young rajah, regent of Bundelcund until his return.

A war next broke out between the British and the

Bunder. Mahrattas. Himmud Bahauder endeavoured to accomplish the transference of this district to the former, while Shumshere was determined to oppose them vigorously. In September 1803 Colonel Powell crossed the river Jumna for the purpose of entering Bundelcund, and was joined by Himmud, with a body of thirteen or fourteen thousand men. The united forces, arriving on the banks of the river Cane, which passes the fort of Callinger, and falls into the Jumna near the town of Oorah, found the army of Shumshere on the opposite side. It was numerous, occupied a great extent, and was strongly posted; but, after a short cannonade on both sides, it precipitately retreated.

At this time a proposal was made by the Mahrattas, and acceded to by the British, for the cession of a portion of the territory of Bundelcund in lieu of certain districts in the Deccan, which had been ceded to them by a former treaty. Forces were then stationed in Bundelcund for the protection of other parts; and successive engagements of a conciliatory nature were formed with Shumshere and all the rest of the chiefs, whereby the British authority was rendered paramount. Himmud Bahauder had previously secured an advantageous arrangement for himself; and his death ensuing in the year 1804, government provided for his family, and assumed possession of his territory. The troops who had been retained in his service, a kind of irregular force, now dispersed. Still, however, the tranquillity of the country was liable to be disturbed; and indeed the cession of some parts of it by the Mahrattas was only nominal, as they had never been able to occupy the strongholds themselves. Thus it was judged expedient by the British to bestow a considerable tract in 1807 on a descendant of the rajah Chattersaul, who had been long dispossessed amidst contending factions, on condition of guarding the passes, and preserving his territory in peace. Other arrangements were made, conceding to the chief of Calpee, on the confines of Bundelcund, a portion of the interior, in lieu of the city and district of Calpee, and several villages on the Jumna. Meantime it became necessary to besiege the fortress of Callinger; but notwithstanding the British forces had captured many strongholds of the Indians, previously deemed impregnable, they were unsuccessful in attempting to take it by assault, and, as already observed, gained possession by the garrison retiring in the night. Its reduction proved a great accession of power, and tended materially to tranquillize the district, which had previously been incorporated with the British empire in the East, and a civil establishment constituted for the regular management of its affairs.

The possession of a country such as Bundelcund, occupying 11,000 square miles, is of considerable consequence in several respects; and it has been suggested that the revenue derived from it might be materially augmented, by assuming the direction of the diamond mines of Pannah. Nevertheless the occupation of the whole does not seem to have been judged an important object, more especially as, by the arrangement above alluded to with the chief of Calpee, he was left in the enjoyment of a third part of them, to which he was originally entitled.

BUNDER, or **BENDER ABBAS**, or **GOMBEROON**, the ancient Harmozia, a fortress of Persia, in the province of Fars, situated in a barren country, in a bay of the Gulf of Ormuz. It is subject to the imaum of Maskat, and is fortified with double walls. It was at one time the first seaport of Persia, and is still a place of considerable trade. The customs amount to 20,000 rupees, above L.2000 a year, for which, and the tribute of Minab, the imaum accounts to the king of Persia. It is eighteen miles south-east of Bushire. Long. 56. 12. E. Lat. 27. 18. N.

BUNDER, or **Bender Reig**, or **Port of Sand**, a town of Persia, in the province of Fars, which stands close to the eastern shore of the Persian Gulf. It is surrounded by a miserable mud wall, flanked with round towers, on which are placed three or four useless guns. This town was the seat of a venerable freebooter, Meer Mahund, whose exploits are partly related by Niebuhr; and during his life it was a place of so much strength as to resist the repeated attacks of Kurim Khan, by whom, however, it was at last taken, after a long siege. The works were razed to the ground; and the town has so much declined since that period, that it does not contain above 300 or 400 inhabitants. It is thirty-five miles north of Bushire.

BUNEL, **PETER**, one of the most elegant writers of his time, was born at Toulouse in 1499, and died at Turin in 1547. He left behind him some Latin epistles, *Epistolæ Ciceroniano Stylo Scriptæ*, remarkable for the elegance and purity with which they are written. Bunel, says Bayle, "was an honest man, the very person whom Diogenes wanted. His letters are written with the greatest purity, and contain curious facts." The most correct edition is that of Graverol, Toulouse, 1687, 8vo.

BUNGAY, a market-town of the hundred of Wangford, in the county of Suffolk, 107 miles from London, on the river Waveney, which divides it from the county of Norfolk, and is navigable to the sea at Yarmouth. It is a well-built town, comprising two parishes with their churches, and the ruins of an ancient monastery and of a castle. There is but little trade except on the Thursday's market. The inhabitants amounted in 1801 to 2349, in 1811 to 2828, and in 1821 to 3290.

BUNNASS, a river of Hindustan, in the province of Ajmeer, where it has its source. It is a rapid stream, about half a mile in breadth in some parts, though during the dry season not above twenty yards of this space contain water. It loses itself in the Kakreze.

BUNTING. See **ORNITHOLOGY**, *Index*.

BUNTINGFORD, a market-town of the hundred of Edwintree, in the county of Hertford, thirty-two miles from London, on the river Rib. It is situated in three different parishes. The church is very ancient, and stands nearly a mile from the town.

BUNTWALLA, a town of Hindustan, in the province of South Canara, situated on the north bank of the river Netravati, which is navigable above the reach of the tide for canoes. It contains about three hundred houses, and is fast improving, being the thoroughfare for the trade between Mysore and Canara. The inhabitants are mostly Brahmins of an inferior caste. Long. 75. 9. E. Lat. 12. 48. N.

BUNTZLAU, a circle in the Austrian kingdom of Bohemia. It extends over 1578 square miles, or 1,009,920 acres, and comprehends twenty-three cities, eighteen towns, and 1034 villages, with 57,640 houses. The inhabitants amount to 352,756. A range of lofty mountains separates this circle from the kingdom of Saxony. The chief place is New Buntzlau, on the river Iser, containing two monasteries, six churches, and about 4000 inhabitants, partly employed in making woollen goods, but chiefly in tanning leather.

BUNTZLAU, a circle in the Prussian government of Liegnitz, extending over 372 square miles, or 238,080 acres, and containing two towns and sixty-two villages, with 6965 houses and 40,074 inhabitants. It is a hilly district, the greater part being covered with woods, but very fertile in the valleys. The capital has the same name, is a fortified city on the river Bober, and a considerable place for earthen ware, linen, and calico-printing manufactures. It has two Catholic churches and one Lutheran, with 5100 inhabitants.

BUNWOOT, an island about eighteen miles in circumference, lying off Pollok harbour, in Magindanao. It has few springs, but many ponds of fresh rain water. In 1775 this island was ceded to Captain Forrest for the East India Company, by the sultan of Magindanao. Long. 124. 28. E. Lat. 7. 14. N.

BUNYAN, JOHN, author of the *Pilgrim's Progress*, was born at Elstow, near Bedford, in 1628. He was the son of a tinker, and in the early part of his life a great reprobate, having served as a soldier in the parliament army; but being at length deeply struck with a sense of his sins, he laid aside his profligate courses, became remarkable for his sobriety, and applied himself to obtain some degree of learning. About the year 1655 he was admitted a member of a Baptist congregation at Bedford, and was soon after chosen their preacher; but in 1660, having been seized and tried for presuming to preach, he was sentenced to perpetual banishment, and in the mean time committed to jail, where necessity obliged him to learn to make long-tagged thread-laces for his support; and, to add to his misery, he had a wife and several children, including a daughter who was blind. In this unjust and cruel confinement he was detained twelve years and a half, and during that time wrote many of his tracts; but he was at length discharged by the humane interposition of Dr Barlow. When King James's declaration for liberty of conscience was published, he was chosen pastor of a congregation at Bedford. He at length died of a fever at London, on the 31st of August 1688, aged sixty. He also wrote an allegory, called the *Holy War*. His *Pilgrim's Progress* has been translated into most European languages; and his works have been collected together, and printed in two volumes folio. "The characteristic peculiarity of the *Pilgrim's Progress*," says an able writer, "is, that it is the only work of its kind which possesses a strong human interest. The allegory of Bunyan has been read by many thousands with tears. This wonderful performance, while it obtains admiration from the most fastidious critics, is loved by those who are too simple to admire it.... In the wildest parts of Scotland the *Pilgrim's Progress* is the delight of the peasantry. In every nursery it is a greater favourite than Jack the Giant-killer. Every reader knows the straight and narrow path as well as he knows a road in which he has gone backward and forward a hundred times. This is the highest miracle of genius, that things which are not should be as though they were,—that the imaginations of one mind should become the perpetual recollections of another; and this miracle the tinker has wrought." (*Edinburgh Review*, vol. liv. p. 452.)

BUOY, in sea affairs, a sort of close cask, or block of wood, fastened by a rope to the anchor, to determine the place where the anchor is situated, that the ship may not come too near it, to entangle her cable about the stock, or the flukes of it.

Can Buoys are in the form of a cone, and of this construction are all the buoys which are floated over dangerous banks and shallows, as a warning to passing ships, that they may avoid them. They are extremely large, that they may be seen at a distance; and are fastened by strong chains to the anchors which are sunk for this purpose at such places.

Cable Buoys are common casks employed to buoy up the cables in different places from rocky ground.

BUPALUS, a celebrated sculptor, and native of the island of Chios, was the son, grandson, and great grandson of sculptors. He had a brother, named Athenis, of the same profession, and they flourished in the sixtieth Olympiad, being contemporary with Hipponax, a poet of an ugly and despicable figure, with whom they diverted themselves by representing him under a ridiculous form. There

were several statues at Rome executed by them; and they worked only on the white marble of the isle of Paros. Pausanias mentions Bupalus as a good architect as well as sculptor, but says nothing of Athenis.

BUPHONIA, in antiquity, an Athenian feast or ceremony, so denominated from a bullock being slain therein, with quaint formalities. From the origin of the buphonia, it may be concluded that by the laws of Attica it was forbidden to kill an ox; but it once happened, at the feast of the *diipolia*, that an ox ate the corn or cakes which had been dressed for the sacrifice, which so enraged Thaulon the priest, that he presently killed the animal and fled. On this the Athenians, dreading the resentment of the gods, and feigning themselves ignorant who had committed the fact, brought the bloody axe before the judges, where it was solemnly arraigned, tried, found guilty, and condemned; and, in memory of this event, a feast was instituted under the denomination of *buphonia*, in which it was still customary for the priest to fly, and judgment to be given respecting the slaughter of the ox.

BURBOT. See *ICHTHYOLOGY*, *Index*.

BURCKHARDT, JOHN LUDWIG. This traveller, celebrated for his extensive journeys in the East, was descended from an ancient family in Switzerland, who had been long established at Kirchgarten, near Lausanne. His father, John Rudolph, had been tried by a French military commission on a charge of having delivered up the *tête du pont* at Hunningen to the Austrians, and, though acquitted, received such treatment from the French republican authorities as made a lasting impression on his mind, and induced him to remove his family from the territories, where their power predominated, and to establish them at Basle. He then entered into a Swiss corps in the service of England.

John Ludwig was the eighth son, and born about the year 1785. Having acquired the usual classical instruction at Basle, he was placed at the university of Leipsic; and, after a residence there of two years, according to a custom very usual with German students, of dividing the time of their academical course among several universities, he concluded his studies, and took his degree, at Göttingen. During his residence at the latter seat of learning, his talents, application, and good conduct had gained him the esteem and respect of the professors, but especially of the celebrated Blumenbach. When he resolved on proceeding to England, Blumenbach gave him a letter of introduction to Sir Joseph Banks, who, with the other members of the African Association, to whom he was introduced, accepted his offer of travelling to explore the interior of Africa. After the plan of his journey had been settled, he diligently prepared himself for it by application to those studies which were most appropriate. He passed his time partly in London and partly at Cambridge in acquiring a knowledge of astronomy, chemistry, mineralogy, medicine, and surgery. He suffered his beard to grow, accustomed himself to the dress and manners of the East, and diligently learned to read, write, and speak the Arabic language; in all which pursuits he was much assisted by Browne, who during his travels in Africa had acquired not merely a knowledge of, but an ardent attachment to, the languages and customs of Mahomedan nations.

After these preparations, and receiving his instructions from the society, he left England, and in April 1809 reached Malta, whence he proceeded to Aleppo in the following October. Being determined to acquire the Arabic language in perfection, he appeared there as a Mussulman under the name of Ibrahim Ibn Abdallah; and, during more than two years passed in that part of Asia, he had so perfected himself in the language as not to be distinguished from the natives, and acquired such accurate

Buphonia
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Burckhardt.

Burden. knowledge of the contents of the Koran, and of the commentaries upon its religion and laws, that after a critical examination, the most learned Mussulmen entertained no doubts of his being really what he professed to be, a learned doctor of their law.

During his residence in Syria he visited Palmyra, Damascus, Lebanon, and the other parts of that interesting country, and thence repaired to Cairo in Egypt, with the intention of joining a caravan, and travelling to Fezzan, in the north of Africa. In 1812, whilst waiting for the departure of the caravan, he was induced to make a journey to the Nile, as far up as Mahass; and then, in the character of a poor Syrian merchant, he made a journey through the Nubian desert which Bruce had traversed, passing by Berber and Shendy to Suakim, on the Red Sea; whence he performed the pilgrimage to Mecca by way of Jidda. In this journey his privations and sufferings seem to have been of the severest kind. He returned thence to Cairo in a state of great exhaustion, but in 1815 travelled to Mount Sinai, whence he returned again to Cairo in June 1816, and there made preparations for his intended journey to Fezzan, and to explore the sources of the Niger.

Several hindrances prevented his prosecuting this intention, till at length, in April 1817, when the long-expected caravan prepared to depart, he was seized with an illness which ended his life. He had from time to time carefully transmitted his journals and remarks, and a very copious series of letters; so that nothing which appeared to him to be interesting in the various journeys he made has been lost. But it is much to be lamented that the life of a man so well qualified as Burckhardt should not have been prolonged, till he had been enabled to solve many of the doubts respecting the interior of Africa, which has excited the curiosity of mankind from the most remote ages.

The communications from Burckhardt have at several periods been furnished to the public in very ample forms, with appropriate maps; and much light has been thrown by them on the geography of the countries he visited, and on the manners, laws, religion, and commerce of their inhabitants. His Journey along the Banks of the Nile from Assouan to Mahass, on the Frontier of Dongola, was published in 1819, in 4to; and the volume contained also a description of a Journey from Upper Egypt through the Deserts of Nubia to Jidda in Arabia. To this is added an Appendix, with an Itinerary from the Frontiers of Bornou by Bahr el Ghazal and Darfour to Shendy; and also notices of the country of Soudan, west of Darfour, and vocabularies of the several languages.

In 1822 a volume was published containing a Tour from Damascus in the countries of Libanus and Anti-Libanus; a Journal of an Excursion into the Haouran in 1810; a Journey from Aleppo to Damascus in 1812; a Journey from Damascus into the Haouran in 1811; a Journey from Damascus through the Mountains of Arabia Petræa in 1812; and a Journal of a Tour in the Peninsula of Mount Sinai in 1816.

In 1829 was published a posthumous volume of Travels in Arabia, in 4to (2 vols. 8vo). This is a very interesting work, containing the narrative of a Journey to Mecca and Medina during the time when the former city was the scene of the great Hadj or pilgrimage, as also the best account yet given of the Wahabee power.

In 1830 appeared another volume, entitled Manners and Customs of the Egyptians, 4to; but this, consisting chiefly of the proverbs current among the people of Cairo, is not of equal value with his former publications. (G.)

BURDEN, or **BURDON**, in *Music*, the drone or bass, and the pipe or string which plays it; hence that part of

a song which is repeated at the end of every stanza is called the *burden* of it. A chord which is divided so as to perform the intervals of music, when open and undivided, is also called the *burden*.

BURDEN of a Ship is its contents, or number of tons it will carry.

BURDWAN, a district of Hindustan, in the province of Bengal, situated between the twenty-second and twenty-fourth degrees of north latitude, and on the western side of the Hooghly river. It is bounded on the north by Birboon and Ranjeshy, on the south by Midnapoor and Hooghly, on the east by the river Hooghly, and on the west by Midnapoor and Pachete. This district is about seventy-three miles long by forty-five broad, and is perhaps the best cultivated and most productive of any similar extent of territory in India; while it appears like a garden in a wilderness, being surrounded by the jungles of Midnapoor in Orissa, of Pachete, and of Birboon. Its products are grain, cotton, silk, sugar, and indigo, which it yields in great abundance, and of excellent quality. The chief towns are Burdwan, Bissunpoor, and Keerpay; and the principal rivers are the Hooghly and Dummoodah. The inhabitants are estimated at two millions, one sixteenth of whom are supposed to be Mahomedans. Gang robbery has been very prevalent here, as in all the lower districts of Bengal; but of late years it has been greatly repressed by the energy of the government.

BUREN, a circle in the Prussian government of Minden, and province of Westphalia. It extends over 262 square miles, or 167,680 acres, and contains four towns, fifty-one villages, sixteen hamlets, and 28,228 inhabitants. It is generally a very poor district, but affords some iron, lead, and salt. The chief place, from which the circle takes its name, stands on the Alme, where it joins the Allfe. Before the expulsion of the Jesuits it was the property of that order, and contains now only 1380 inhabitants.

BURFORD, a market-town of the hundred of Bampton, in the county of Oxford, seventy-three miles from London, on the river Windrush. It is celebrated as the place where an ecclesiastical synod was held in 685, to determine on the time for celebrating Easter; for a battle between Cuthred, king of the West Saxons, and Ethelbald, king of the Mercians; and for a victory by Fairfax in 1649 over the army of Charles I. The church is a large and handsome fabric, with a lofty spire. There is very little trade. The market is held on Saturday. The inhabitants amounted in 1801 to 1516, in 1811 to 1342, and in 1821 to 1409.

BURGAGE, or **BURGAGE-TENURE**, is where the king or other person is lord of a borough in which the tenements are held by a rent certain. A borough is distinguished from other towns by the right of sending members to parliament; and where the right of election is by burgage-tenure, that alone is a proof of the antiquity of the borough. Tenure in burgage, therefore, or burgage-tenure, is where houses, or lands which were formerly the site of houses, in an ancient borough, are held of some lord in common soccage, by a certain established rent. These tenures seem to have withstood the shock of the Norman encroachments, principally on account of their insignificance, as a hundred of them put together would scarcely have amounted to a knight's fee. Besides, the owners of them, being chiefly artificers, and persons engaged in trade, could not with propriety be put on a military establishment like that founded on the tenure in chivalry; and hence the free soccage in which these tenements are held seems to be a remnant of Saxon liberty, which may account for the variety of customs affecting many of the tenements held in ancient burgage.

BURGE-HOLDING, in Scotland, is the tenure by which the property in real burghs is held under the king, and is originally constituted by a charter from the crown in favour of the burgh, the effect of which is, that every proprietor within the burgh holds his property directly of the king as superior, for the *reddendo*, now merely nominal, of watching and warding, or "service of burgh used and wont." The title of a disponent to a burgage property proceeds on a resignation made by delivery of staff and baton in the hands of the magistrates, in virtue of a procuratory granted by the vassal last infeft, and followed by an infeftment given by the magistrate in favour of the disponent, without the intervention of any precept or charter by progress. The title of an heir in burgage subjects is sometimes completed by a precept of *clare constat* and infeftment, but more frequently by a single act called a cognition and seisin. The proper vassal in burgage-holding being the whole community, which, in a legal sense, never dies, the ordinary casualties are not exigible; and the nature of the tenure also properly excludes such infeudations, although a base infeftment in an annual rent out of burgage property, given by a bailie of the burgh as bailie in that part, and the town-clerk, as a common notary, has been held as effectual. No widow's tierce is due from burgage subjects.

BURGAU, a city, the capital of a magistracy of the same name, in the circle of the Upper Danube, of the kingdom of Bavaria. The district extends over sixty-five square miles, and contains, besides the city, one market-town, with thirty-five villages and 11,408 inhabitants. The city is situated on the river Mindel, has an ancient palace or castle, and 2530 inhabitants.

BURGEBRACH, a town, the chief place of a magistracy of the same name, in the circle of the Upper Maine, and kingdom of Bavaria. The judicature extends over 195 square miles, and contains, besides the town, fifty-eight villages, with 13,430 inhabitants. The town is small, and has only 114 houses.

BÜRGER, GODFREY AUGUSTUS, a celebrated German poet, born on the 1st of January 1748, at Wolmerswende, a village in the principality of Halberstadt, where his father was Lutheran minister. In his childhood he discovered little inclination to study; the Bible and the Canticles alone had any attraction for him: these he knew by heart; and his first attempts in versification were imitations of the Psalms, which, notwithstanding their defects, gave proofs of feeling and a correct ear. It is to this first direction of his studies that we are to attribute the biblical phrases, the allusions to Christianity, and the theological style, if we may be allowed the expression, which we find even in his amatory poetry. He was fond of solitude, and indulged in all the romantic sentiments which deserts and the gloom of forests inspire. From the school of Aschersleben, where his maternal grandfather resided, and which he quitted in consequence of a severe chastisement which had been inflicted on him for composing an epigram, he was sent to the institution at Halle; but at neither of these places did he make any very sensible progress. He discovered a taste only for the lessons in prosody and versification which were given to the scholars of the institution, in which his friend Götingk was a class-fellow with him, who afterwards distinguished himself by his epistles and songs, and who has lamented the premature death of Bürger in an elegy to his memory. In 1764 Bürger, who was intended for the clerical office, began to attend the course of lectures given by the professors of the university. Klotz, a learned classical scholar, admitted him of the number of young people whose talents he took a pleasure in cultivating; but this society appears not to have produced the same favourable effect on the moral character of Bürger as on his genius. His conduct pre-

judiced his grandfather Bauer against him; and it was with difficulty that he obtained from him some further assistance, with permission, in the year 1768, to repair to Göttingen to prosecute the study of the law instead of that of theology. This change did not make him more regular in his studies; his manners became corrupted; and his grandfather withdrew his protection. Bürger contracted a number of debts; and his situation would have become altogether desperate had it not been for the assistance of some friends. An association, memorable in the annals of German literature, had just been formed at Göttingen: it reckoned among its members Boje, Biesler, Sprengel, Hölty, Müller, Voss, the two Counts Stolberg, C. F. Cramer, and Leisewitz. Bürger was admitted into it. All of these persons were versed in the Greek and Roman literature, and, at the same time, all of them idolized Shakspeare. The Germans are the only foreigners who seem to relish or understand the merits of this great genius in the same degree as his own countrymen profess to do; and they do not seem to like his genius the less on account of the irregularities objected to it by other nations. Bürger, in a great measure, owed his style to the enthusiasm which he showed, in common with his literary friends, for our celebrated tragic writer. The *Reliques of Ancient English Poetry*, published about this time by Dr Percy, gave an additional impulse to the direction which his mind had taken, and suggested to him some of the productions which his countrymen admire the most. Of all his friends, Boje was the one who exercised the greatest influence over him in the choice and management of his compositions. He taught him to make easy verses by taking pains; and it is to his severe observations that the poetical stanza of Bürger owes a great part of that elegance and roundness which characterize it. To the same friend he was indebted also for some improvement in his circumstances, which, till the year 1772, had been very uncomfortable. On the recommendation of Boje he was appointed to the collectorship of Alvensleben, in the principality of Calenberg. The winter following, some fragments of a ghost story, which he heard a peasant girl singing by moonlight, caught his imagination, and his *Leonora* appeared, which soon became popular in all parts of Germany. Soon after the publication of this ballad, a circumstance occurred to give him still greater confidence in his talents. Going a journey to his native place, he one evening heard the schoolmaster of the village, in the room next to that in which he lay, reading to the assembled audience collected at the inn the ballad of *Leonora*, which had just come out, and which was received with the liveliest marks of admiration. This proof of success flattered him more than all the compliments of his friends. About this time he married a Hanoverian lady, named Leonhart; but this union proved only a source of bitterness to him, an unhappy attachment to her younger sister having sprung up in his heart. The loss of a sum of money, of which his grandfather had made him a present, was the first commencement of the embarrassment of his circumstances. The taking of a large farm, which he did not know how to manage, increased it; and the dismissal from his place, which he was obliged to submit to in 1784, in consequence of suspicions (probably ill-founded) raised against the fidelity of his accounts, gave the finishing stroke to his misfortunes. He had, a little before, lost his wife; and it is but too certain that her death was hastened by the culpable passion which Bürger cherished in his heart. Left with two children, and reduced to the inconsiderable emoluments of *The Almanack of the Muses*, published at Göttingen, which he had edited since 1779, he removed to this city, with a view to give private lessons there, and in the hope of obtaining from the

Bürger.

Bürger.

Hanoverian government a professor's chair in the belles-lettres. Five years afterwards, the title was conferred on him, but without a salary; yet this was the only public recompense obtained during his whole life by a man who was one of the favourite authors of his nation, and who, while yet young, had enjoyed the highest reputation. Scarcely were the ashes of his wife cold when he espoused her sister Molly, whose name his poems have made but too famous, and who had embittered the existence of his first wife; but he did not long enjoy the happiness after which he had sighed. She died in childhood in the beginning of 1786. From that moment his own life only lingered on; and the fire of his genius seemed extinguished with the passion which had so long nourished it. He had scarcely strength enough, in the intervals of his dejection, to finish his *Song of Songs*, a sort of dithyrambic or nuptial hymn, intended to celebrate his second marriage, and which is a strange mixture of frantic passion, religious devotion, and the most bombastic expression. It was the last production of Bürger. Having studied the philosophy of Kant, he had an idea of deriving some advantage from it at Göttingen, where it had not yet been taught. He undertook to explain it in a course of lectures, which were attended by a great number of young people. The satisfaction which the university expressed to him for two cantatas which he composed in 1787, at the period of the fifty years' jubilee of this illustrious institution, and his nomination to the situation of professor extraordinary, re-animated his spirits. Fortune appearing to smile on him once more, he formed the design of marrying again, in order to provide a mother for his children. During one of the moments when he was most occupied with this idea, he received a letter from Stuttgart, in which a young woman, whose style indicated a cultivated mind, and her sentiments an elevated and feeling heart, after describing to him, with enthusiasm, the impression which his poetry had made upon her, offered him her hand and heart. Bürger spoke of the thing at first only in jest, but the information which he received respecting the character, the fortune, and personal accomplishments of his correspondent having excited his curiosity, he took a journey to Stuttgart, and brought back with him a wife who embittered and dishonoured the rest of his days. In less than three years he saw himself under the necessity of obtaining a divorce from her; and the ruin of his health aggravated the absolute disorder of his finances. Confined to a small chamber, the favourite poet of Germany wasted the remainder of his strength in translations ordered by foreign booksellers; but sickness and grief soon deprived him even of this resource, and he must have died in the most frightful state of want, if the government of Hanover had not extended some kindness to him. He died on the 8th of June 1794, of a disorder of the bowels, which he had never believed to be dangerous.

Bürger is only remarkable as a lyric poet. He has tried all the different species of this class of the productions of genius; but he succeeded eminently only in the song and the ballad. We shall, perhaps, characterize his genius sufficiently by saying that his imagination is more fresh than rich,—that he has more sensibility than elevation, more naïveté and good nature than delicacy or taste. His style sparkles by its clearness, its energy, and from an elegance which is rather the result of labour than of natural grace; he possesses, in short, all the qualities which please the multitude. Allowing the title of poet only to those whose writings were calculated to become popular, he early habituated himself to reject whatever appeared to him not sufficiently intelligible and interesting to all classes of readers. Always clear and forcible, he is never either low or trivial; and if at certain times there appears

a want of selection and care in the details, yet the sentiments are uniformly noble, and the moral intention of the majority of his pieces altogether irreproachable. Some breathe the loftiest piety and the purest love of virtue. Wieland said of him (see the *German Mercury*, 1778), that in composing his poem entitled *Männerkeuschheit* (on Chastity), Bürger had deserved better of the present and future generations, than if he had written the finest treatise of morality. This little piece has been inserted in most of the collections of hymns for the use of the Lutheran church.

There are three editions of Bürger's works. The first two appeared in his lifetime, in 1778 and 1789, in 3 vols. 8vo; and the third, after his death, was published by his friend Ch. Reinhard, in 4 vols. 1796. All three were printed at Göttingen. The last contains some posthumous pieces, and miscellanies in prose. We must confine ourselves to a short notice of those for which their merit or the singularity of the subject has procured the greatest degree of celebrity. 1. A translation, or rather an imitation, of the *Vigil of Venus* (*Pervigilium Veneris*.) It is a fine piece of poetic diction and rhythmical harmony. 2. *Leonora*, a romance; which belongs to the class which Bürger himself called the *epic lyric*. This story is borrowed from a popular tradition, of which the traces are to be found in the different countries of the north. *Leonora* was translated into Danish in 1788, six times into English, by Stanley, Pyc, Spencer, Taylor, &c., and from English into French by De la Madelaine in 1811. The translation by Mr Spencer is accompanied with engravings after designs by Lady Diana Beauclerc. Two German composers have set it to music. Bürger often appeared very ill contented with the vast success of this production of his youth. He preferred a great number of his other poems, and was himself the first to blame the puerile trick of the play upon sounds which he has here indulged in. 3. *The Minister's Daughter of Taubenhain* is the story of the seduction and tragical end of a young girl. There are in this, as in the other productions of the same author, some objectionable details, but the whole leaves a deep impression. 4. *The Inhuman Huntsman*. 5. *The Song of the Brave*; in which the heroism of a peasant, who saves a family from the fury of the waves, is related with admirable feeling. 6. *The Song of Songs, conceived at the foot of the altar*. This is a hymn or ode in praise of his Molly. 7. *A Travesty of the Fable of Jupiter and Europa*. This is a piece of humour of the most clumsy kind, and in a taste the most wretched, yet it had a great run when it first appeared. 8. *A translation in iambic verse, of some books of the Iliad*. The choice of the measure is by no means happy. He was accordingly requested ironically, to set about translating Anacreon into hexameters, when he had finished his version of Homer into German iambs. 9. *An excellent Translation of Shakspeare's Macbeth*. 10. *Pieces of Poetry and of Rhetorical Prose*. He had begun to write critical observations on his own works, with equal severity and sagacity; but he has only left some fragments of this work. 11. He was editor of the *Göttingen Almanack of the Muses*, from 1779 to 1794. Vetterlein, Pöhlitz, and Engel, have published a selection of the poetry of Bürger, with notes; and celebrated composers, such as Schulz and Reichardt, have set a great number of his songs to music. Bürger's third wife, whom German biography has thought worthy to have her name associated with his on account of her taste for literature, and particularly poetry, is author of several pieces in verse inserted in the collections. The one having for its title *The Raillery of a Mother*, is sufficient to prove her poetical talent.

BURGESS, an inhabitant of a borough or walled town,

burghs or one who possesses a tenement therein. Anciently, burgesses were held in great contempt, being reputed servile, base, and unfit for war; so that the gentry were not allowed to intermarry in their families, or fight with them, but in lieu thereof to appoint champions.

BURGESS is now ordinarily used for the representative of a borough in parliament. Burgesses are supposed to represent the mercantile part, or trading interest, of the nation; and they were formerly allowed, by a rate established in the reign of Edward III. two shillings a day as wages. The right of election of burgesses depends on several local charters and customs; and by 3 Geo. III. c. 15, no freeman, except such as claim by birth, servitude, or marriage, is entitled to vote, unless he has been admitted to his freedom twelve months before. Burgess, in Scotland, is a member of the corporation of a burgh, admitted either by the charter of erection, or by birth, as being the son of a burgess, or by serving an apprenticeship to a burgess, or by marrying the daughter of a burgess, or by election by the magistrates of the burgh. The heir of a burgess has a right to heirship movables.

BURGGRAVE properly denotes the hereditary governor of a castle or fortified town, chiefly in Germany. The word is compounded of *bourg*, town, and *graf* or *grave*, count. The burgraves were originally the same with what is otherwise called *castellans* or *comites castellani*; but their dignity was considerably advanced under Rodolph of Hapsburg. Before his time they were ranked only as counts, and below the princes, but under him they began to be esteemed as on a footing with princes. In some parts the dignity has much degenerated.

BURGH, a market-town of the Lindsay division of the hundred of Candleshoe, in the county of Lincoln, distant a hundred and thirty-six miles from London. The country around it is a rich tract of marshy land, in which the best oxen are fattened. The market is held on Thursday. The inhabitants amounted in 1801 to 716, in 1811 to 709, and in 1821, to 903.

BURGHBOTE signifies contribution towards the building or repairing of castles or walls, for the defence of a borough or city. By a law of King Athelstan, the castles and walls of towns were to be repaired, and burghbote levied every year within a fortnight after roagation days. No person whatever was exempt from this service, and even the king himself could not exempt a man from burghbote; yet in after-times exemptions appear to have been frequently granted, insomuch that the word burghbote came to denote, not the service, but the liberty or exemption from it.

BURGHBRECHE, or BURGHBRECH, a fine imposed on the community of a town or burgh, for a breach of the peace among them.

BURGHMOTE, the court of a borough. By the laws of King Edgar, the burghmote was to be held thrice in the year; by those of Henry I. twelve times.

BURGLARY, or NOCTURNAL HOUSE-BREAKING (*burgi latrocinium*), which by the ancient English law was called *hamesucken*, a word also used in the law of Scotland, but in a somewhat different sense, has always been looked upon as a very heinous offence. The definition of a burglar, as given by Sir Edward Coke, is, "he that by night breaketh and eptereeth in a mansion-house with intent to commit a felony." Burglary is a felony at common law, but within the benefit of clergy.

BURGLENGENFELD, a magistracy in the circle of Regen, in the kingdom of Bavaria, which comprehends 323 square miles, and contains 24,500 inhabitants. The city from which it takes the name stands in a most romantic situation, and in the neighbourhood of others of similar beauty, on the river Nab. It contains about 1500 inha-

bitants, who are chiefly occupied in the manufacture of fire-arms, and in the tanning of leather.

BURGOMASTER, BURGHERMASTER, BURGERMASTER, or BURGMESTER, the chief magistrate of the great towns in Flanders, Holland, and Germany. The power and jurisdiction of the burgomaster are not the same in all places, every town having its particular customs and regulations. The word is formed from the two Flemish words *borger*, burgess, or citizen; and *mester*, master. Some express it in Latin by *consul*, others by *senator*. *Burgermaster*, in Holland, answers to *alderman* and *sheriff* in England.

BURGOMASTER. See ORNITHOLOGY, *Index*.

BURGOS, a province of Castile, in the north of Spain, bounded on the north by the ocean; on the east by Biscay, Alava, and Soria; on the south by Segovia; and on the west by Palencia, Valladolid, Toro, and Asturias. Its extent is 7822 square miles. It is a lofty territory, intersected by ranges of mountains, between which are extensive and fruitful valleys. The soil is for the most part sandy, intermixed with stones, but in some parts is of a good loamy description. The loftiest mountains are in the north, called the Cantabrian, which are covered with woods; whilst the Sierra Reynosa and others are bare, and almost utterly barren. The valleys in the province are watered by various small streams, and their tributary rivulets, the waters of all which are collected in part by the Ebro, which conveys them to the Mediterranean Sea, and in part by the Douro, which runs to the Atlantic Ocean. The climate is generally temperate, the summers being cool, and, except on the loftier parts, the winters not sufficiently cold. The atmosphere in the interior is commonly clear, but on the coast moist and foggy. The agriculture, though ill conducted, produces a sufficiency for the population. The breeding of cattle is the most profitable branch of rural industry; and the province supplies its neighbours with many cows, sheep, goats, horses, mules, and asses. Some silk, flax, and hemp are produced, but in very small quantities. There are scarcely any manufactures except of the domestic kind, or upon a very small scale. The inhabitants at the last correct census, that of 1803, amounted to 470,588; and it is probable they have increased since that period. The province contains five cities, 583 towns, and 1118 villages. The only places of more than 5000 inhabitants are Burgos, Logroño, and Santander.

Burgos, a city, the capital of the province of the same name, in Spain. It is situated on a hill, around which the river Arlanzon winds. It is fortified, but its chief defence is the castle, which checked the progress of the British army. It is the see of an archbishop, whose cathedral is large and handsome, though antique. It has, besides, fourteen other churches, and twenty-four religious houses. It is the seat of the military academy and an ecclesiastical seminary, and contains about 11,000 inhabitants. Long. 3. 46. 14. W. Lat. 42. 20. 59. N.

BURGUNDIONES, a part or branch of the Vindili or Wandili, placed by Cluverius about the Warta, a river of Poland; though the conjectures as to the seat of this people are doubtful. They afterwards removed to Cisalpine Germany, and at length to Celtic Gaul, and gave name to the duchy and county of Burgundy.

BURGUNDY, called also Burgundy Proper, or Lower Burgundy, formerly a province in the east of France, lying on the west of Franche-Comté, and on the south of Champagne. It now forms the departments of the Yonne, Côte d'Or, Saône et Loire, and Ain, under which several heads Burgundy will be found described.

BURHAMPOOR, a town of Hindustan, in the province of Bengal, situated on the east bank of Bhagirathi or Cosimbazar river, five miles from Moorshedabad. Here is stationed a brigade of troops in commodious cantonments.

Burgo-
master
||
Burham-
poor.

Burial
||
Burias.

which consist of a fine range of buildings in an open lawn. Long. 89. 14. E. Lat. 24. 3. N.

BURIAL, the interment of a deceased person. In almost all countries the rites of sepulture have been looked upon as a debt so sacred, that those who neglected to discharge it were thought infamous. Hence the Romans called them *justa*, and the Greeks *νομιμα*, *δικαια*, *οσια*, words implying the inviolable obligation which nature has laid upon the living to perform the obsequies of the dead. Nor need we wonder that the ancient Greeks and Romans were extremely solicitous about the interment of their deceased friends, seeing they were strongly persuaded that their souls could not be admitted into the Elysian fields till their bodies had been committed to the earth; and if it happened that they never obtained the rites of burial, they were excluded from the happy mansions for the term of a hundred years. For this reason it was considered as a duty incumbent upon all travellers who happened to meet with a dead body in their way, to cast dust or mould upon it three times; and of these, one portion at least was cast upon the head. The ancients likewise considered it as a great misfortune if they were not laid in the sepulchres of their fathers; for which reason the ashes of those who died in foreign countries were usually brought home and interred with those of their ancestors. But notwithstanding the great care in the burials of the dead, there were some persons whom they thought unworthy of the last office, and to whom therefore they refused it; namely, public or private enemies; such as betrayed or conspired against their country; tyrants, who were always looked upon as enemies to their country; villains guilty of sacrilege; such as died in debt, whose bodies belonged to their creditors; and offenders who had suffered capital punishment.

Of those who were allowed the rites of burial, some were distinguished by particular circumstances of disgrace attending their interment. Thus persons killed by lightning were buried apart by themselves, being thought odious to the gods; those who wasted their patrimony forfeited the right of being buried in the sepulchres of their fathers; and those who were guilty of self-murder were privately deposited in the ground, without the accustomed solemnities. Among the Jews the privilege of burial was denied only to self-murderers, who were thrown out to rot upon the ground. In the Christian church, though good men always desired the privilege of interment, yet they were not, like the heathens, so concerned for their bodies as to think it any detriment to them if either the barbarity of an enemy or some other accident deprived them of this privilege. The primitive Christian church denied the more solemn rites of burial only to the unbaptized, to self-murderers, and to excommunicated persons who continued obstinate and impenitent in contempt of the censures of the church.

The place of burial among the Jews was never particularly determined. They had graves in the town and country, upon the highways, in gardens, and upon mountains. Among the Greeks the temples were made repositories for the dead in the primitive ages; yet the general custom in later ages with them, as well as with the Romans and other heathen nations, was to bury their dead without their cities, and chiefly by the highways. Among the primitive Christians burying in cities was not allowed for the first three centuries, nor in churches for many ages after. Dead bodies were first deposited in the atrium or church-yard, and in the porches and porticoes of the church; and hereditary burying-places were forbidden till the twelfth century.

BURIAS, one of the Philippine Isles, about forty-three miles in length by nine in average breadth. It is surrounded with shoals and rocks, and was formerly possessed

by a colony of piratical cruisers from Magindanao. Long. 123. E. Lat. 13. N.

BURIATS, **BURATY**, or **BRATSKY**, a tribe of Tartars, now brought under the jurisdiction of Russia, and widely dispersed throughout Siberia, in the government of Irkutsk, wherein their numbers are computed from the capitation tax at about sixty thousand. Their features are of a genuine Tartar cast, resembling those of the Kalmucks, though they are not quite so flat, the nose being somewhat higher, and the countenance more open. They themselves trace their origin to the Kalmucks, and not to the Moguls. They are entirely pastoral in their habits, and depend for their subsistence chiefly on their flocks. The principal occupations of the men are riding and hunting; and they are dexterous archers as well as skilful horsemen. They are esteemed honest and sincere, and both sexes are extremely courteous. They are very ignorant, and debased by the grossest paganism. The residence of this tribe is chiefly around the banks of the lake Baikal, and those of the rivers Angora and Lena.

BURIDAN, **JOHN**, a native of Bethune, in Artois, was one of the most celebrated philosophers of the fourteenth century. He taught in the university of Paris with great reputation, and wrote commentaries on logic, morality, and Aristotle's metaphysics. Aventinus relates that he was a disciple of Ockam; and that, being expelled Paris by the power of the realists, which was superior to that of the nominalists, he went into Germany, where he founded the university of Vienna.

BURKE, **EDMUND**, an illustrious writer, orator, and statesman, was born in Dublin on the 1st of January 1730. His father was an attorney, first in Limerick, and afterwards in Dublin. Young Burke received the rudiments of his education at Castletown Roche. He was afterwards put under the tuition of Abraham Shackleton, a quaker of some celebrity in Ballitore, in the county of Kildare. Committed to the care of a master so well qualified for the business of instruction, he applied to his studies with commendable assiduity, and in this seminary laid the foundation of his knowledge of the ancient languages, and probably also imbibed that love of liberty which so often pointed his oratory, inflamed his passions, animated his sentiments, and in his best days secured him an almost unequalled reputation.

Here several years of his life were spent; and the attachment of the master and the gratitude of the pupil reflect equal honour on both. The former lived to see his scholar attain a considerable degree of reputation; and the latter, on his part, was accustomed to spend a portion of his annual visit to Ireland at Ballitore. He also kept up an epistolary correspondence with him, which lasted till the death of his tutor.

From this provincial seminary Edmund was sent to the university of Dublin. But here he does not appear to have distinguished himself much either by application or talents: his character as a student was merely negative. He received a degree, however, before he departed, and during this period he commenced author, by writing some political essays.

Mr Burke now addicted himself to other pursuits, particularly logic and metaphysics, and is said to have planned a refutation of the systems of Berkeley and Hume. But whilst thus employed in treasuring up the means of attaining a species of celebrity which far different avocations prevented his afterwards aspiring to, he was not inattentive to the grand object of obtaining a suitable settlement in life. His family was not opulent, and as he already panted after independence, he repaired to the metropolis, and enrolled his name as a student of the Inner Temple.

It appears from his speeches, his writings, and his conversation, that he studied the outlines of our municipal jurisprudence with attention; but it may be doubted whether he ever entered deeply into the study of law. The versatility of his talents and his avocations were, indeed, but little calculated for that dull and plodding perseverance which can alone lead to an intimate knowledge of our laws; and even if he had been gifted with the necessary application, both time and opportunity were wanting; for it is well known that at this period of his life the *res augusta domi* did not permit the student to dedicate his attention solely to this, or indeed to any other single pursuit. The exhausted state of his finances called frequently for a speedy supply; and, instead of perusing the pages of Bracton, Fleta, Littleton, and Coke, he was obliged to write essays, letters, and paragraphs, for the periodical publications of the day. But if these pursuits diverted his attention from graver studies, they acquired him a facility of composition, and a command of style and of language, which proved eminently serviceable to him in the course of his future life. About this period he became a candidate for a vacant chair in the university of Glasgow, but he was unsuccessful.

His health, however, became at length impaired, and a nervous fever ensued. This circumstance induced him to call in the aid of Dr Nugent, a countryman of his own, and a man of amiable manners, though not of extensive practice. This gentleman, who was himself an author, readily discovered the source of Mr Burke's malady, and, by removing him from books and business to his own house, soon effected a cure; an event which is said to have been hastened, if not entirely completed, by a physician of another kind, the accomplished daughter of Dr Nugent, whose delicate attentions to the invalid appear to have made a deep impression on his heart. In fact this lady afterwards became Mrs Burke; and the circumstance was particularly fortunate for him, as her disposition was mild and gentle, and she continued throughout a long series of years, and many vicissitudes of fortune, to soothe and tranquillize passions always violent, and often tumultuous.

After some time ostensibly spent in the study of law, Mr Burke seems to have determined once more to endeavour to distinguish himself as an author; and accordingly he took advantage of the death of a celebrated nobleman to compose a work after the manner of that distinguished writer, so that, by exaggerating his principles, he might be enabled to bring them into contempt; but this effort proved unsuccessful, and the treatise in question was for a long time consigned to oblivion, nor would it have ever been heard of, had it not been resuscitated by his future fame. But the success of another performance made ample amends for this disappointment. His *Essay on the Sublime and Beautiful* attracted a great degree of notice, and acquired him considerable celebrity as a man of letters. In addition to the profits of the publication, he is said to have received a present of a hundred pounds from his father; but his circumstances must have been greatly embarrassed about this time, as he was obliged to sell his books,—a measure which nothing but the extremity of distress could have forced a man of letters to resort to.

This work having an immediate relation to taste, excited a desire in Sir Joshua Reynolds, even then at the head of his profession, to become acquainted with Mr Burke; and a friendship ensued which continued uninterrupted during the life of the painter, and was unequivocally testified by a handsome bequest in his will. Dr Johnson also sought and obtained his friendship; and he now became the constant frequenter of two clubs, composed of some of the most celebrated men of that day. One of these met at the Turk's Head Tavern in Gerrard

Street, and consisted of Dr Johnson, Mr (afterwards Sir Joshua) Reynolds, Dr Goldsmith, Mr Topham Beauclerc, Dr Nugent, Sir John Hawkins, Mr Bennet Langton, Mr Chamier, Mr Garrick, and Mr Burke. The other assembled at the St James's Coffee-house, and, besides many of the above, included Mr Cumberland, Dr Douglas, bishop of Salisbury, Dr Bernard, dean of Derry, Mr Richard Burke, Mr William Burke, Mr Hickey, and others. Dr Goldsmith, who was Mr Burke's contemporary at Dublin College, was member of both, and wrote the epitaphs of those who composed the latter.

A literary work on a new plan, first suggested in 1750, and by some attributed to the Doddsleys, but by others to Mr Burke, became for some time a considerable source of emolument to him. This was called the *Annual Register*, a publication which soon obtained considerable celebrity, and of which he had for several years the superintendence.

But Mr Burke was at length called off from his literary pursuits by avocations of a far different kind. A gentleman who afterwards obtained the name of Singlespech Hamilton, having been appointed secretary to the lord-lieutenant of Ireland, invited his friend Mr Burke to accompany him thither, an offer which he readily accepted; and although he acted in no public station, and performed no public service, while he remained in that country, he was rewarded with a pension of three hundred pounds per annum, which the conduct of Mr Hamilton soon afterwards compelled him to throw up.

On his return to England he amused himself, as usual, with literary composition; and a series of essays written by him in a newspaper, which at the time enjoyed great celebrity, attracted the notice of the Marquis of Rockingham; in consequence of which Mr Fitzherbert, father of Lord St Helen's, introduced him to that nobleman. From this moment he became a public man, and dedicated his studies, his eloquence, and his pen, almost exclusively to politics. Meanwhile Lord Rockingham, having proved more compliant than the Earl of Chatham, came into power; and when seated on the treasury bench, he selected Mr Burke as his private secretary,—an office of no power, and very little emolument, but one which naturally leads to both. As it was now necessary that he should have a seat in parliament, although it can scarcely be supposed that he was legally qualified in point of property, he applied to Lord Verney, patron of Wendover, and was returned for that borough, which was then dependent on his lordship, being principally occupied by his tenants.

Having thus obtained a seat in 1765, he prepared to qualify himself for his new situation. He had all the necessary talents, and was only deficient in knowledge of the forms of business, and in facility of expressing his sentiments before a public audience. The first of these he mastered by sedulous attention; and as to the second, if we are to credit those who were intimately acquainted with him at this period of his life, he overcame all difficulties by a previous initiation elsewhere. In short, he had acquired celebrity at the Robin Hood before he attempted to speak in the British senate, and vanquished an eloquent baker ere he began to cope with the greatest orators this nation has ever produced.

Holding a confidential place under the Rockingham administration, he of course supported all its measures. A former ministry, anxious to increase its influence by means of increased imposts, had conceived the idea of taxing America through the medium of a parliament in which she was not represented, and attempted to carry this into effect by means of the famous stamp act; but the Americans, alarmed at what they conceived to be a flagrant violation of every principle of the English constitution, made

Burke.

such a spirited resistance to the measure, that it was abandoned, and the Rockingham party readily consented to the repeal. Under the pretext, however, of vindicating the honour of the crown, they unfortunately proposed and carried the declaratory act, by means of which, although the original scheme was abandoned, the principle on which it had been built was asserted anew, and a foundation laid for all the miseries which afterwards ensued. But if the Rockingham administration deserved no great credit on this occasion, it is entitled to considerable praise on account of other parts of its conduct; for it repealed the cider act, procured a declaration of the House of Commons condemning the seizure of papers, and carried a resolution against general warrants. On retiring from office, however, they did not carry much popularity along with them; Lord Chatham and his friends, who in some measure monopolized the public favour, were intrusted with the management of affairs for a short time; and it is extremely probable that they would have sunk into neglect had not America been driven into open resistance.

It now fell to the lot of Lord North to enforce the scheme which the Grenville party had projected, which the Rockingham administration had by an unaccountable blunder at once recognised and annihilated, and which they afterwards manfully and at length successfully opposed. This forms the most brilliant epoch of Mr Burke's life. He was hostile to the expulsion of Mr Wilkes, an act which the House of Commons afterwards rescinded from its records. On the application of the dissenters for relief, he espoused their cause, and expressed his resentment in very animated terms against that misguided policy which permitted all those not within the pale of the establishment to enjoy liberty less by right than by connivance. But perhaps the noblest part of his conduct consisted in his steady and uniform opposition to the American war, and his marked hostility to the abettors of the struggle. His speech against the Boston Port Bill was one of the most brilliant specimens of oratory that had ever been displayed in the British senate; and on the 19th of April 1774, on a motion for the repeal of the tea duty, he discovered such talents, that an old and respectable member exclaimed, "Good God, what a man is this! How could he acquire such transcendent powers?" And when, in reply to another who had said that the Americans were our children, and it was horrible to revolt against their parent, the orator uttered the following passage, the whole house was electrified: "They are our children, it is true; but when children ask for bread, we are not to give them a stone. When those children of ours wish to assimilate with their parent, and to respect the beautiful countenance of British liberty, are we to turn to them the shameful parts of our constitution? Are we to give them our weakness for their strength; our opprobrium for their glory; and the slough of slavery, which we are not able to work off, to serve them for their freedom?"

The city of Bristol, the merchants of which had become rich by the commerce with America, were likely to suffer by its interdiction. This consideration alone rendered many of them hostile to the proceedings of the ministry; but nobler and more exalted motives actuated the bosoms of some, particularly the quakers, dissenters, and other sectaries, who were moved by zeal against oppression, and a love of liberty imprinted on their minds by a constitution which until then had remained inviolate. Gratified by the exertions of Mr Burke in behalf of civil and religious freedom, they put him in nomination for the city, and sent into Yorkshire to request his immediate personal attendance. After consulting with his patron concerning an offer so flattering and unexpected, accompanied at the same time with assurances most punctually fulfilled,

that he should be put to no expense whatever, he immediately set out for the west of England, and found that no less than three candidates had started before him. The first was Lord Clare, afterwards Lord Nugent, one of the former representatives, whose unpopularity was such that he soon discovered the necessity of resigning all his pretensions; and of the two others, Mr Cruger and Mr Brickdale, who remained in the field, the former, like Mr Burke himself, was averse to a rupture with America.

The new candidate did not appear on the hustings until the afternoon of the sixth day's poll, on which occasion he addressed the electors in a very able speech, admirably calculated for the occasion; expressing a modest diffidence of his own abilities, and a high opinion of the important trust they were assembled to confer; boldly declaring himself hostile to a contest with America; and asserting that England had been rendered flourishing by liberty and commerce, the first of which was dear to his heart, whilst the latter had been a favourite object of his studies, both in its principles and details. This harangue was well received by the electors; the contest proved propitious to his wishes; and when the sheriffs had notified, at the close of the poll, that he was elected, he delivered the most brilliant address on the occasion that had ever been heard within the walls of the city.

Mr Burke returned from his new constituents to parliament with increased vigour, reputation, and zeal. The Earl of Chatham, notwithstanding his reputation for wisdom, having failed in an attempt to adjust the troubles of the colonies by means of a conciliatory bill introduced by him into the House of Peers for that purpose, the obstinacy of the ministry now became apparent to every one. But this circumstance, which would have appalled an inferior man, did not, however, discourage the member for Bristol from making a similar attempt in another place; and accordingly, on the 22d March 1775, he brought forward his celebrated thirteen propositions, which were intended to close the fatal breach, and heal all the differences between the mother country and her colonies. His plan, on this occasion, embraced not only immediate conciliation, by a repeal of the late coercive acts, but also the creation of an independent judicature, and the regulation of the courts of admiralty. The whole, however, was quashed by a large majority on the side of the minister who moved the previous question.

Mr Burke had hitherto chiefly distinguished himself in opposition to the measures of others; but in 1780 he himself stood forth as the original author of a scheme which soon engaged the attention of the public, and actually appeared big with the most important results. When he found ministers obstinately persisting in a disastrous war, and perceived that the people began to bend beneath the weight of the taxes for its support, it struck him as at once advantageous and politically expedient to attempt to diminish the public burdens and the number of adherents of the court. Accordingly, on the 11th of February, he brought in a bill for the regulation of his majesty's civil establishments, and of certain public offices; for the limitation of pensions, and the suppression of sundry useless, expensive, and inconvenient places; and for applying the monies saved thereby to the public service. This scheme was manifestly founded on the late reforms which had taken place in France; for, by an edict of the king, registered in the parliament of Paris, it appeared that he had suppressed no less than four hundred places in his household by one regulation. The orator judiciously adverted to this event, and endeavoured to make use of it as an incitement to a similar attempt here, calling in national rivalry by way of an inducement to consent to this sacrifice on the part of the crown. To this bill the minority did

not at first give much opposition; and indeed the mover of it contrived to soften those features which appeared harsh to them. But notwithstanding this, it did not prove successful during Lord North's administration; and when it was at length carried, it was much modified and altered.

Parliament was dissolved in 1780, but Mr Burke was not re-elected for Bristol. This is said to have made a deep impression on the mind of the orator; but it must have been obliterated by the important events which speedily ensued; for the minister now tottered on the treasury bench, being abandoned by many of his staunchest supporters, and but little confident in his own schemes, all of which had proved eminently unsuccessful. Meanwhile the opposition having increased to a considerable degree, unceasingly assailed him, until at length, on the 28th March 1782, Lord North assured the House of Commons that his administration was at an end.

The day had now arrived when the ministry and opposition were to change places, and Mr Burke, whose services had been so conspicuous, was made a privy counselor, and invested with the lucrative appointment of paymaster-general of the forces. He was thus at length enabled to enforce his plan of political economy, tendered before in vain; and the board of trade, the board of works, the offices of third secretary of state, treasurer of the chamber, cofferer of the household, the lords of police in Scotland, the master of the harriers, the master of the stag-hounds, the six clerks of the board of green cloth, and the paymaster of the pensions, were abolished. But when the reins of government were confided to the hands of the Marquis of Lansdown, then Earl Shelburne, this event gave such offence to those who wished to place the Duke of Portland at the head of affairs, that Mr Fox, Lord John Cavendish, and Mr Burke, immediately resigned.

In the mean time the critical state of the English East India Company had long agitated the public mind, and become occasionally a subject of discussion in parliament. The seizure, imprisonment, and confinement of Lord Pigot, by a faction in the council of Madras—the conduct of Mr Hastings in respect to several of the native powers—and the grand question of sovereignty, relative to the territorial possessions of the Company in Asia—had all at different times excited the attention of the nation. Accordingly, when Mr Fox and his friends came into power, he brought in a bill to remedy the various abuses in the government of British India. Of this bill Mr Burke is well known to have been in a great measure the author; and when it was introduced into parliament, he defended its principles and provisions with all the zeal of a parent. Notwithstanding much opposition both within and without, this celebrated bill was carried triumphantly through the House of Commons; but in the House of Peers it experienced a far different fate, and with it fell the power and consequence of its authors, framers, and supporters.

In the course of the next year, 28th February 1785, he made a splendid speech relative to the nabob of Arcot's debts; and depicted one of his creditors, who had taken an active share in the late elections, "as a criminal who long since ought to have fattened the region kites with his offal; the old betrayer, insulter, oppressor, and scourge of a country (Tanjore), which had for years been an object of an unremitted, but unhappily an unequal struggle, between the bounties of Providence to renovate, and the wickedness of mankind to destroy." But there appeared to Mr Burke to be a still greater delinquent; and accordingly he resolved to sacrifice, if possible, the powerful offender himself at the shrine of national vengeance. This was Mr Hastings; and, soon after his arrival in England, the orator gave notice of his intentions. On the 17th of February 1785 he opened the accusation by a most elo-

quent speech, in which he depicted the alleged crimes of the ex-governor-general in the most glowing and animated colours. This trial, however, turned out in the event very different from what had been expected; whilst the length of it failed not to involve both Mr Burke himself and his party in reproach.

During the debate on the commercial treaty with France, 23d January 1787, Mr Burke, then member for Malton, exhibited an undiminished versatility of talents, and pointed his ridicule with no common success at Mr Pitt, who, according to him, contemplated the subject with a narrowness peculiar to limited minds:—"He seems to consider it," said he, "as an affair of two little counting-houses, and not of two great nations. He seems to consider it as a contention between the sign of the *fleur-de-lis* and the sign of the old *red lion*, for which should obtain the best custom."

The next public event of importance in which we find Mr Burke engaged, occurred in consequence of his majesty's indisposition. On this occasion he took an active part in the debates of the House of Commons, and is supposed to have penned a letter for one, and a speech for another branch of the royal family. When Mr Pitt moved his declaratory resolutions relative to the provisional exercise of the royal authority, Mr Burke attacked him with much asperity of language, and was particularly severe on the manner in which the royal assent was to be given to all future acts of parliament. The men who held most of the high places under the government were treated as jobbers, old hacks of the court, and the supporters and betrayers of all parties; and he declared that it was a mock crown, a tinsel robe, and a sceptre from the theatre, lackered over and unreal, which were about to be conferred on the prince of Wales.

The opposition, diminished indeed by a few occasional desertions, had hitherto acted as a great public body, supposed to be united in general principles for the common welfare and prosperity of the state; but the French revolution thinned their ranks, dispelled their consequence, and, by sowing jealousy between the chiefs, spread consternation and dismay among their followers. It was on the 2d of March 1790, when Mr Fox moved for leave to bring in a bill to repeal the corporation and test acts, that this disunion became evident; and soon afterwards Mr Burke declared that his honourable friend and he were separated in their politics for ever.

The ministry now seemed anxious to provide for their new associate; and he, on his part, certainly appeared deserv- ing of some remuneration at their hands, for he had abandoned all his old friends, and not a few of his old principles. In addition to this, his *Reflections on the Revolution in France* had afforded some degree of countenance, and even popularity, to the measures of administration; and, not content with his own exertions, he had enlisted his son on the same side, and even sent him to Coblenz. The royal munificence at length gratified his warmest wishes; for by a warrant, dated 24th September 1795, he received a pension, made to commence from the 5th January 1793, of £1200 for his own life and that of his wife, on the civil list; whilst two other pensions of £2500 a year for three lives, payable out of the four and a half per cent. fund, dated 24th October 1795, were made to commence from the 24th July 1793. Honours as well as wealth now seemed to await him, for he was about to be ennobled, when the untimely death of an only child put an end to his dreams of ambition, and contributed not a little to hasten his own, which occurred at his house at Beaconsfield on the 9th of July 1797.

Thus died, in the sixty-eighth year of his age, Edmund Burke, one of the greatest orators, statesmen, and authors

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of his age; a man whose name will long continue to be celebrated; and one who, had he fallen during the meridian of his fame and character, would have scarcely been considered as second to any man, either of ancient or modern times.

BURKITT, WILLIAM, a celebrated commentator on the New Testament, was born at Hitcham in Northamptonshire 25th July 1650, and educated at Pembroke Hall, Cambridge. He entered young upon the ministry, having been ordained by Bishop Reynolds; and the first employment which he had was at Milden in Suffolk, where he continued twenty-one years a constant preacher, first as curate, and afterwards as rector of that church. In the year 1692 he had a call to the vicarage of Dedham in Essex, where he continued to the time of his death, which happened in the latter end of October 1703. He was a very pious and charitable man; made great collections for the French Protestants in 1687 and the years immediately following; and by his great care, pains, and charges, procured a worthy minister to go and settle in Carolina. Among other charities, by his last will and testament he bequeathed the house in which he lived, with the lands thereunto belonging, as a habitation for the lecturer who should be chosen from time to time to read the lecture at Dedham. Besides his commentary on the New Testament, written in the same plain, practical, and affectionate manner in which he preached, he wrote a volume entitled *The Poor Man's Help and the Rich Man's Guide*.

BURLEIGH. See CECIL.

BURLESQUE, a species of composition, which, though a great engine of ridicule, is not confined to the ridiculous alone; for it is clearly distinguishable into burlesque that excites laughter merely, and burlesque that excites derision or ridicule. A grave subject, in which there is no impropriety, may be brought down by a certain colouring so as to be risible, as in *Virgil Travestie*; the author laughing at every turn in order to make his readers also laugh. The *Lutrin* is a burlesque poem of the other sort, laying hold of a low and trifling incident in order to expose the luxury, indolence, and contentious spirit of a set of monks. Boileau, the author, turns the subject into ridicule by dressing it in the heroic style, and affecting to consider it as of the utmost dignity and importance. Though broad ridicule is the poet's aim, he always carries a grave face, and never once betrays a smile. The opposition between the subject and the manner of handling it is what produces the ridicule; and therefore, in a composition of this kind, no image professedly ludicrous ought to be admitted, because such images destroy the contrast.

Though the burlesque that aims at ridicule produces its effects by elevating the style far above the subject, yet the poet ought to confine himself to such images as are lively and readily apprehended. A strained elevation, soaring above the ordinary reach of fancy, makes not a pleasant impression. The mind is soon disgusted by being kept long on the stretch. Machinery may be employed in a burlesque poem, such as the *Lutrin*, *Dispensary*, or *Hudibras*, with more success and propriety than in any other species of poetry; for burlesque poems, though they assume the air of history, give entertainment chiefly by their pleasant and ludicrous pictures. It is not the aim of such compositions to raise sympathy, for which reason a strict imitation of nature is not necessary; and hence, the more extravagant the machinery in a ludicrous poem, the more entertainment it affords.

BURLINGTON, or BRIDLINGTON, a sea-port town of England, in the East Riding of Yorkshire, situated on a bay called Burlington Bay, formed by Flamborough Head, which is about five miles distant, nearly north-east. It is situated about a mile from the shore; but there is another

portion of it, named Burlington Quay, situated directly on the coast, formed by a pier which extends a considerable way into the bay. Considerable trade is carried on here, and the burden of the shipping belonging to the port amounts to about 6000 tons. A weekly market is held here, and two annual fairs. Burlington and Burlington Quay contain about 4000 inhabitants. Long. 0. 8. W. Lat. 54. 8. 30. N.

BURLINGTON, a post-town of Vermont, and capital of Chittenden county. It is the most considerable commercial town of Vermont, and possesses a university, a court house, a jail, a bank, an academy, and three places of public worship. The trade is principally with New York. The population in 1820 was 2111. Long. 73. 15. W. Lat. 44. 27. N.

BURMAN, PETER, a philologist and critic of high reputation, was born at Utrecht on the 26th of June 1668. His father, Francis Burman, professor of divinity in that university, was the son of a German clergyman, whom the destructive war of the Palatinate had driven from Frankenthal: his mother was Mary the daughter of Abraham Heydan, professor of divinity in the university of Leyden. Thus he was doubly connected with men of letters, and various members of the same family distinguished themselves by their writings. While he was yet in the eleventh year of his age, he had the misfortune to lose his pious and learned father; but this loss, great as it certainly was, appears to have been in a very considerable degree supplied by the assiduity, prudence, and piety of his mother. He was educated in the public school of Utrecht, where his progress must have been very rapid, for at the age of thirteen he became a student in the university. For several years he attended the lectures of Grævius, a professor of great learning and eminence, who ably blended Greek with Latin erudition, and to whose private friendship, joined to his public instructions, Burman seems to have been in a great measure indebted for that strong predilection which he continued to evince for philological studies. Here, among other departments of literature, he assiduously cultivated Latin composition, and he gradually attained to no mean proficiency both as an orator and a poet.

Burman's original destination was for the legal profession; and after having devoted some years to literature, he next applied himself to the study of the law. The university of Utrecht was then highly distinguished as a school of jurisprudence, and among other great names, it could boast of Noodt, one of the ablest civilians of modern times. He attended the lectures of this professor, and likewise those of Van Muyden and Van de Poll, who both taught the municipal as well as the civil law; nor did he neglect the lectures of H. Cocceii on the feudal law, and on the treatise of Grotius *De Jure Belli ac Pacis*. A further proof of his assiduity he exhibited in a dissertation *De Vicesima Hereditatum*, which he publicly defended with great applause.

It is a common practice for the more liberal and inquisitive students of Holland and Germany to pass from one university to another, and the practice has an obvious tendency to improve the youthful mind, by removing local prejudices, and by introducing a new current of refined thought. Burman accordingly spent a year at Leyden, where he studied philosophy under Volder, but in the mean time did not neglect his favourite pursuits of classical erudition. He attended the lectures of the younger Gronovius on some of the Greek writers, together with those of Ryckius on Tacitus. Of this Latin historian, the latter professor was about that period engaged in preparing a new edition, with a separate volume of animadversions. Returning to the university of Utrecht, he continued to

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man. cultivate the friendship of Grævius, and to profit by his instructions and advice. In the month of March 1688 he took the degree of doctor of laws, having previously written and defended a learned dissertation *De Transactionibus*. "The attainment of this honour," as Dr Johnson has remarked, "was far from having upon Burman that effect which has been too often observed to be produced in others, who, having in their own opinion no higher object of ambition, have elapsed into idleness and security, and spent the rest of their lives in a lazy enjoyment of their academical dignities. Burman aspired to further improvements, and, not satisfied with the opportunities of literary conversation which Utrecht afforded, travelled into Switzerland and Germany, where he gained an increase both of fame and learning."

But having made choice of a profession, it had now become necessary to enter upon a new course; and on his return to his native city, he applied his talents and learning to the practice of the law. We are informed that he pleaded various causes with much force and eloquence; nor will this account appear improbable to those who are acquainted with the vigour and decision displayed in his ordinary strain of composition. On the first of December 1691 he was appointed receiver of the tithes which were originally paid to the bishop of Utrecht: this was an office of considerable credit, and was usually bestowed upon persons of some distinction. While engaged in these occupations, he married Eve Clotterboke, the daughter of a burgomaster of Briel, much commended for her beauty and accomplishments. She became the mother of ten children, eight of whom died at an early age, and only two sons survived their father. This learned advocate might have risen to great eminence in his profession; but as the love of letters was his predominant passion, he gladly availed himself of an opportunity of leaving the bar and returning to the university. A recommendation from his friend Grævius to the magistrates of Utrecht procured him the professorship of eloquence and history, to which was afterwards added the professorship of the Greek language, and that of politics. His first appointment was that of an extraordinary professor, or of a professor *extra ordinem*. He took possession of his chair on the 10th of December 1696; and on that occasion pronounced an oration *De Eloquentia et Poetice*. His academical labours, which were thus so various, must likewise have been very formidable; but being a man of an excellent capacity, and of unwearied application, he ably performed whatever he had undertaken, and gradually acquired a high and merited reputation. His lectures attracted a numerous auditory, and his multifarious publications rendered his name familiarly known wherever ancient learning was successfully cultivated. The most serious labours of his life were devoted to the illustration of the Roman classics, and in this department he had but few rivals.

Soon after his appointment to the professorship, he published a collection of letters from learned men, and chiefly relating to topics of learning: "Marquardi Gudii et doctorum Virorum ad eum Epistolæ; quibus accedunt ex bibliotheca Gudiana clarissimorum et doctissimorum Virorum, qui superiore et nostro sæculo floruerunt, et Claudii Sarravii, Senatoris Parisiensis, Epistolæ ex eadem

bibliotheca auctiores; curante Petro Burmanno." Ultrajecti, 1697, 4to. About the same period he prepared an edition of Phædrus. Amst. 1698, 8vo. This edition was twice reprinted; and after an interval of nearly thirty years, he published the same poet with a new commentary. He next produced "Q. Horatius Flaccus. Accedunt J. Rutgersii Lectiones Venusinæ." Traj. Batav. 1699, 12mo. Burman has prefixed a dedication and preface, but the only notes which occur are those of Janus Rutgersius, who died in the year 1625, after having established no mean reputation as a scholar by the publication of his *Varia Lectiones*. These editions were followed by a learned dissertation, entitled "*Zeus Karawearns, sive Jupiter Fulgurator in Cyrrhestarum Nummis*." Traj. Bat. 1700, 4to. Resuming the illustration of the Latin poets, he now prepared an edition of Valerius Flaccus. Ultraj. 1701, 12mo. This edition includes the notes of N. Heinsius, who had himself published the text in 1680; but after a long interval, Burman edited the same poet with more ample illustrations, which were partly derived from various other critics. Leidæ, 1724, 4to. He was chosen rector of the university in 1703, and again in 1711.

Grævius, one of the chief ornaments of the university of Utrecht, died in the year 1703, and his grateful pupil honoured his memory by a funeral oration, which is ably and affectionately written, and contains an interesting sketch of his life and character. His great and valuable collection of writers on Roman antiquities is well known among scholars. He engaged in a more extensive undertaking, a collection of writers on the history and antiquities of Italy; and after his decease, the charge of inspecting its progress devolved upon Burman, who contributed nine different prefaces. "*Thesaurus Antiquitatum et Historiarum Italiæ*." Lugd. Bat. 1704-25, 45 tom. fol. The book is described in the title as "tomis x. vel voluminibus xlv. distinctus;" each volume consisting of several parts, which amount to the size of volumes. Burman likewise wrote the preface to an edition, undertaken by Grævius, of Gruter's "*Inscriptiones Antiquæ totius Orbis Romani*." Amst. 1707, 2 tom. fol.

His next literary enterprise was an edition of a prose writer, Petronius Arbitr. Traj. ad Rhen. 1709, 4to. The learned editor was attacked in an anonymous publication, consisting of a few pages, and bearing the title of "*Burmänniana, sive Calumniarum Petri Burmanni in Collegas et Populares Specimen*." Amst. 1710, 12mo. These calumnies are collected from his annotations on Petronius. His most elaborate edition was very unfavourably noticed by Le Clerc,¹ who by the freedom of his strictures in various publications, more particularly in his different *Bibliothèques*, had excited the resentment of many eminent members of the republic of letters. Of grammarians and verbal critics he spoke with habitual contempt, and thus increased the offence that was merely personal. Some of his philological mistakes had been exposed by Perizonius, but he was attacked by Burman in a more ferocious manner. His literary delinquencies were fiercely discussed in the preface to Petronius; and his contemptuous review of the edition was followed by a volume entitled "*Le Gazetteier Menteur, ou Mr. Le Clerc convaincu de Mensonge et de Calomnie, par Pierre Burman*." Utrecht, 1710, 12mo. Whatever may have been the extent of the

¹ Bibliothèque Choisie, tom. xix. p. 351.—Le Clerc commences his review in the following terms: "Je ne mets pas ici cette édition, pour en rendre compte au public. Il n'y a rien qui mérite son attention." The rest of the article is written in the same strain of disparagement, nor has the author confined himself to his adversary's literary character. The subsequent passage refers to his morals: "Je ne parlerai pas de l'imprudence qu'il y a à parler ainsi, pendant un procès, où une fille l'accuse de l'avoir débauchée." P. 365. The learned professor has adverted to this charge, but, as it appears to us, not in such clear and direct terms of disavowal as might naturally have been expected from a man conscious of his innocence. (Burman, *Gazetteier Menteur*, p. 24.) Le Clerc ascribes to him a satire against himself, published the year 1703, in the form of a Latin dialogue between Spudæus and Gorallus; and the manner in which Burman speaks of it seems to justify his suspicions.

Burman. provocation, and it was by no means inconsiderable, the spirit of this work is not to be commended. Burman's edition was long afterwards attacked in a separate volume, written by some anonymous author, whose animosity was not equalled by his learning.¹ "Chrestomathia Petronio-Burmenniana; sive Cornu-copiæ Observationum eruditissimarum et ante plane inauditarum, quas vir illuminatissimus, rerum omnium, et multarum præterea aliarum, peritissimus, Petrus Burmannus conguessit in Petronium Arbitrum, scriptorum sanctissimum. Accessit Specimen Latinitatis novæ, Romanis incognitæ, e Notis Petri Burmanni ad Petronium." Florentiæ, 1734, 8vo. Although the work thus bears the imprint of Florence, the typography is apparently Dutch. Another edition of Petronius appeared after the death of the indefatigable editor. Lugd. Bat. 1743, 4to. Le Clerc had published his unfortunate edition of Menander and Philemon in the year 1709; and in the course of the ensuing spring Dr Bentley, under an assumed name, transmitted his *Emendationes* to Burman, who lost no time in communicating to the public such a morsel of criticism. Traj. ad Rhen. 1710, 8vo. Under his own name, he prefixed a preface of thirty-four pages, in which he assailed Le Clerc with extreme virulence, and enumerated many errors which the author had left unnoticed. Not satisfied with relieving his spleen in this manner, he added a poetical address to the Manes of the injured poets, in which he endeavoured to condense the essence of his vituperation. Of the spirit of this effusion the reader may be enabled to judge from a brief specimen:

Scilicet hæc nostris servata informia seclis
Prodigia, et nullis monstra pianda sacris.

Burman soon afterwards published a compendium entitled "Antiquitatum Romanarum brevis Descriptio." Ultraj. 1711, 8vo. His early study of jurisprudence was not without its advantages in those departments of literature to which he devoted himself with such persevering energy. His knowledge of the civil law he found of frequent use in illustrating the Latin classics; and he published an elaborate and valuable work which bears a reference to law as well as history, "De Vectigalibus Populi Romani Dissertatio." Ultraj. 1714, 8vo. Of this dissertation the original sketch had appeared in 1694; and he lived to publish an edition greatly improved, and combined with his Jupiter Fulgurator. Leidæ, 1734, 4to.

"In 1714," says Dr Johnson, "he formed a resolution of visiting Paris, not only for the sake of conferring in person, upon questions of literature, with the learned men of that place, and of gratifying his curiosity with a more familiar knowledge of those writers whose works he admired, but with a view more important, of visiting the libraries, and making those enquiries which might be of advantage to his darling study. The vacation of the university allowed him to stay at Paris but six weeks, which he employed with so much dexterity and industry, that he had searched the principal libraries, collated a great number of manuscripts and printed copies, and brought back a great treasure of curious observations. In this visit to Paris he contracted an acquaintance, among other learned men, with the celebrated Father Montfaucon, with whom he conversed, at their first interview, with no other character than that of a traveller; but their discourse turning upon ancient learning, the stranger soon gave such proofs of his attainments, that Montfaucon declared him a very uncommon traveller, and confessed his curiosity to know his name; which he no sooner heard, than he rose from his seat, and, embracing him with the utmost ardour, expressed his satisfaction at having seen the man whose productions of various kinds

he had so often praised; and, as a real proof of his regard, offered not only to procure him an immediate admission to all the libraries of Paris, but to those in remoter provinces, which are not generally open to strangers, and undertook to ease the expenses of his journey by procuring him entertainment in all the monasteries of his order. This favour Burman was hindered from accepting by the necessity of returning to Utrecht, at the usual time of beginning a new course of lectures, to which there was always so great a concourse of students, as much increased the dignity and fame of the university in which he taught."

When his talents and learning had thus procured him a high and well-earned reputation, the death of Perizonius left a vacancy in the professorship of history, the Greek language, and eloquence, in the university of Leyden; and Burman had the honour of being nominated the successor of a man who had occupied a very conspicuous place among the scholars of the age. He was distinguished by the acuteness of his intellect, and the solidity of his judgment: he was equally skilled in Greek and Roman literature, and with his critical skill he united a masterly knowledge of the most abstruse departments of ancient history. Burman, who was no unworthy successor, took possession of his chair on the 2d of July 1715, and then pronounced an inaugural oration, "De publici Humanioris Disciplinæ Professoris proprio Officio et Munere." He was afterwards appointed professor of the history of the United Provinces, and likewise of poetry; and to all these functions was finally added the office of keeper of the university library. He was twice chosen rector of the university, namely, in 1719 and in 1731.

In the midst of these academical toils, which would have been more than sufficient for a person of ordinary application, he still found leisure for the preparation of elaborate editions of Latin classics, and, among the rest, for an edition of Velleius Paterculus. Lugd. Bat. 1719, 8vo. It was reprinted after the death of the editor. Lugd. Bat. 1744, 8vo. From this ancient historian he made a transition to an ancient rhetorician, and completed an edition of the works of Quintilian. Lugd. Bat. 1720, 3 tom. 4to. The last volume is occupied with the declamations ascribed to that writer, and with those of Calpurnius Flaccus. A pompous edition of Quintilian was afterwards produced by Capperonnier (Paris, 1725, fol.); and as Burman thought himself treated with less than due respect, he took an ample revenge in a work entitled "Petri Burmanni Epistola ad Claudium Capperonnerium, Theologum Licentiatum, Diaconum Ambianensem, et Græcæ Linguae Professorem, de nova ejus M. Fabii Quintiliani de Institutione Oratoria Editione." Leidæ, 1726, 4to. Among other branches of learning, the Parisian professor has betrayed his ignorance of the Roman law, and on this account is severely chastised by his unrelenting adversary. But in the mean time Burman had superintended an edition of Justin, which is without a commentary, but contains an excellent preface. Lugd. Bat. 1722, 12mo.

His editorial labours were next bestowed upon a modern author, whose fame is nearly classical. An elaborate edition of Buchanan had been published by Ruddiman in the year 1715. The value of his annotations was very generally acknowledged, but the narrow and pitiful prejudices of a Jacobite frequently entangled his judgment; and every subject which bore to politics any reference, however remote, was viewed through a dim medium. The political tendency of his preface and notes was so far from being agreeable to the admirers of Buchanan, that a Whig

¹ "In qua voluit errorum graviorum arguere Burmannum, ipse, dum reprehendere voluit, gravissime sæpe lapsus, risum præbuit." (Fabricii *Bibliotheca Latina*, tom. ii. p. 160. edit. Ernesti.)

man. association was speedily formed at Edinburgh, for the express purpose of vindicating their favourite author in a new edition of his works. Their efforts however proved abortive, and the task of editorship devolved into more able hands. Arrested by the frequent and wide variation between the author and his *jure divino* editor, Burman had nearly been induced to relinquish his undertaking, and to advise his printer Langerak to procure assistance from Scotland, where the authenticity of the facts could best be ascertained. Of the new edition projected at Edinburgh he was likewise apprized; though it does not appear, as some writers pretend, that the associated critics made him a voluntary offer of private assistance. The printer however urging him to proceed without waiting for this vindicatory edition, he at length republished the works of Buchanan, together with Ruddiman's preface, notes, dissertation, and other appendages.¹ The annotations which he himself subjoined are almost entirely philological. His other engagements did not permit him to undertake the task of correcting the press; and accordingly his edition is somewhat less accurate than that of his predecessor. The general value of Ruddiman's labours he acknowledges in terms of due respect; but he occasionally rejects his particular opinions in a manner which that learned man was disposed to regard as contemptuous; and some of his expressions relative to British literature, and to the native country of Buchanan, were such as could not easily be forgotten. Two years afterwards, when Ruddiman edited the Latin poems of Dr Pitcairne, he eagerly embraced an opportunity of asserting the honour of his native country; and the same topics were yet fresh in his recollection when he resumed his long labours at the venerable age of eighty-one.

Of the epistolary correspondence of literary men, Burman was a curious and diligent collector. At a much earlier period of his life he had published the epistle of Gudius and other scholars; and he now prepared a more ample and voluminous work, which appeared under the title of "*Sylloge Epistolarum a Viris illustribus scriptarum.*" Leidæ, 1727, 5 tom. 4to. This collection, which forms a great repository of literary anecdote and critical disquisition, is occasionally illustrated with the notes of the editor. In the course of the same year, he completed the printing of a work which holds a very distinguished place among his learned labours, namely, his edition of the works of Ovid. Amst. 1727, 4 tom. 4to. Like several of his other editions of the classics, it contains not merely his own notes, but likewise those of various commentators. Ovid was evidently one of his favourite authors, and he has bestowed much care and attention in the adjustment of the text, as well as in its illustration. With regard to the text, his chief guide is Nicolaus Heinsius, a most able critic in Latin poetry. Burman had formerly published a small edition without a commentary. His next edition, *cum notis variorum*, was that of the "*Poetæ Latini Minores.*" Leidæ, 1731, 2 tom. 4to. This curious collection was succeeded by an edition, equally elaborate, of the works of Suetonius. Amst. 1736, 2 tom. 4to. After another short interval followed "*M. Annæi Lucani Pharsalia, cum commentario Petri Burmanni.*" Leidæ, 1740, 4to. In the preface to this publication, he speaks of Bentley with some degree of asperity. They were both men of great eminence in classical literature; and although they were both of the same irascible temper, the friendly relations between them had been of long duration. Some suspicions and jealousies had however intervened, in consequence of

their having each projected an edition of Lucan at a much earlier period; and the breach had been rendered irreparable, by Burman's decisive measure of subjoining Dr Hare's *Epistola Critica* to his fourth edition of Phædrus.²

But the labours of this indefatigable scholar were now drawing to a close. His health had originally been vigorous, and those who have the slightest acquaintance with his history must be aware that he was capable of enduring great and continued toil. His temperate mode of living, and his attention to bodily exercise, long contributed to preserve a healthful constitution; but a scorbutic disease, incidental to that climate, having supervened, he found himself unable to take his usual walks, or other recreation, and was at last afflicted with many painful symptoms of a decayed frame and shattered nerves. While he languished in a state of hopeless decay, he had the honour of receiving a letter from Bignon, keeper of the royal library at Paris, accompanying a copy of the printed catalogue, transmitted to him by his majesty's command. This mark of royal favour might possibly cast a faint gleam of earthly comfort on his bed of sickness; but he now required consolation from a higher source, and with a due mixture of fervour and humility he appears to have approached the fountain of living waters. His religious opinions had either been misunderstood or misrepresented; and he felt a commendable solicitude to remove this erroneous impression, by the most unequivocal declaration of his hopes in the mercy of God through the mediation of Jesus Christ. In this devout frame of mind he closed a long and active life, on the 31st day of March 1741, in the seventy-third year of his age.

At the period of his death, he had made great progress in a new edition of Virgil, and it was afterwards completed by his learned nephew, who bore the same name with himself. Amst. 1746, 4 tom. 4to. To the younger Burman we are likewise indebted for the collective edition of his poems, which appeared under the following title: "*Petri Burmanni Poematum libri quatuor, nunc primum in lucem editi, curante Petro Burmanno Juniore.*" Amst. 1746, 4to. His orations were collected by another editor, Nicolaus Bondt: "*Petri Burmanni Orationes, antea sparsim editæ, et ineditæ auctæ. Accedit Carminum Appendix.*" Hagæ Comitum, 1759, 4to. Of the Latin language Burman possessed a masterly knowledge, and in verse as well as prose he writes with vivacity and energy; but he is less scrupulous in his diction than some more recent members of the same university, especially Ruhnkenius and Wyttenbach. He is entitled to the praise of a skilful versifier; and his elegiac poems are sufficient to evince that he had not studied Ovid in vain. His orations, which are eighteen in number, had been delivered on various occasions of academical solemnity, and several of them contain a large infusion of verse. The collection is closed by a funeral oration, written by his colleague, H. Oosterdyk Schacht, from which we have borrowed most of our notices respecting his personal history; but our account of his writings is necessarily derived from other sources. In this enumeration of his posthumous works, it remains to be mentioned that his annotations on Claudian were printed in his nephew's edition of that poet.

The character of Burman is ably and impartially delineated by Dr Johnson. "He was a man of moderate stature, of great strength and activity, which he preserved by temperate diet, without medical exactness, and by allotting proportions of his time to relaxation and amusement, not suffering his studies to exhaust his strength, but

¹ Georgii Buchanani Opera omnia. Lugd. Bat. 1725, 2 tom. 4to.

² Phædri, Augusti Liberti, Fabularum Æsopiarum libri quinque, cum novo commentario Petri Burmanni. Leidæ, 1727, 4to.

Burman.

relieving them by frequent intermissions; a practice consistent with the most exemplary diligence, and which he that omits will find at last that time may be lost, like money, by unseasonable avarice. In his hours of relaxation he was gay, and sometimes gave way so far to his temper, naturally satirical, that he drew upon himself the ill-will of those who had been unfortunately the subjects of his mirth; but enemies so provoked he thought it beneath him to regard or to pacify; for he was fiery, but not malicious, disdained dissimulation, and in his gay or serious hours preserved a settled detestation of falsehood.¹ So that he was an open and undisguised friend or enemy, entirely unacquainted with the artifices of flatterers, but so judicious in the choice of his friends, and so constant in his affections to them, that those with whom he had contracted familiarity in his youth had for the greatest part his confidence in his old age.

"His abilities, which would probably have enabled him to have excelled in any kind of learning, were chiefly employed, as his station required, on polite literature, in which he arrived at very uncommon knowledge, which however appears rather from judicious compilations, than original productions. His style is lively and masculine, but not without harshness and constraint, nor perhaps always polished to that purity which some writers have attained. He was at least instrumental to the instruction of mankind, by the publication of many valuable performances, which lay neglected by the greatest part of the learned world; and, if reputation be estimated by usefulness, he may claim a higher degree in the ranks of learning than some others of happier elocution or more vigorous imagination."²

Such was the personal and literary character of Burman, as it presented itself to the sagacious observation of this distinguished writer. His name however is less favourably known to the readers of English poetry, where it is repeatedly used to denote whatever is dull and pedantic. Pope, who was not himself a very profound scholar, endeavoured to restore a sort of equilibrium by disparaging the attainments of those who were most conspicuous for their erudition. Bentley is supposed to have excited his spleen by bestowing a too scanty measure of praise on his translation of Homer; nor did the poet neglect any opportunity of directing the edge of his satire against "that awful Aristarch," and those who successfully cultivated similar studies. The following verses occur in the *Dunciad*, b. iv. v. 235.

How parts relate to parts, or they to whole,
The body's harmony, the beaming soul,
Are things which Kuster, Burman, Wasse, shall see
When man's whole frame is obvious to a flea.

If to his other qualifications Pope had added one half of the critical learning possessed by Bentley, Kuster, Burman, or Wasse, he would have found himself in a better condition for writing notes on Homer. Mallet, who was anxious to recommend himself to the favour of so great a poet, aimed his shafts in the same direction. His poem *Of Verbal Criticism* contains the subsequent passage:

Such the choice anecdotes, profound and vain,
That store a Bentley's and a Burman's brain:
Hence Plato quoted, or the Stagyrice,
To prove that flame ascends, and snow is white;
Hence much hard study, without sense or breeding,
And all the grave impertinence of reading.

Dr Armstrong, a contemporary poet, has indulged in a

similar vein of sarcasm; nor do we feel much inclination to commend these lines in his *Art of Preserving Health*, b. iv. v. 52.

The strong-built pedant, who both night and day
Feeds on the coarsest fare the schools bestow,
And crudely fattens at gross Burman's stall,
O'erwhelm'd with phlegm lies in a dropsy drown'd.

The injustice and absurdity of such censures as these it would here be idle to expose. If we admit the value of the ancient classics, we must also admit the expediency of their being rendered intelligible; and how this could have been effected without the intervention of critics and philologists, it would not perhaps be so easy to discover. Bentley, Burman, and many other verbal critics who might be enumerated, were possessed of uncommon talents, as well as erudition; and the ingredients which enter into the formation of an able commentator on the classics, are more rare and more numerous than some individuals may be apt to imagine.

Of the two surviving sons of Burman, the elder, named Francis, made choice of a military life, and obtained promotion in the army. His brother Caspar, who betook himself to the profession of the law, was elevated to the bench, and was elected a deputy to the states general. He was likewise a man of letters, and published several works, which illustrate the civil and literary history of his native country. "*Analecta Historica de Hadriano VI. Pontifice Maximo.*" Traj. ad Rhen. 1727, 4to. "*Trajectum eruditum, Virorum Doctrina inlustrum, qui in Urbe Trajectina, et Regione Trajectensi nati sunt, sive ibi habitarunt, Vitas, Fata, et Scripta exhibens.*" Traj. ad Rhen. 1738, 4to. He is also the author of a work in the Dutch language, published in 1750-1 under the title of *Utrechtse Jaarboeken*, and extending to three volumes. He died on the 22d of August 1755.

His grandfather Francis Burman, who has already been mentioned as professor of divinity at Utrecht, published various works on theology.³ He was born at Leyden in 1632, and died at Utrecht in 1679. His son Francis was born at Utrecht in 1671, became professor of divinity in that university in 1715, and died in 1718. He was the author of different works, written in the Latin and Dutch languages. His son John Burman, M. D. was born in 1707, was appointed professor of botany at Amsterdam, and died in 1780. He evinced much zeal in his own branch of science, and published several works on botany. Nicolas Laurens Burman, M. D. his son, and his successor in the botanical chair, was born in 1734, and died in 1793, after having produced some works in his own department. Francis Burman, the brother of John, was the third individual of the same name and family who held the professorship of divinity at Utrecht.⁴

But a more conspicuous member of the same remarkable family, was his other brother Peter Burman. On the 13th of October 1714 he was born at Amsterdam, where his father was then a minister. When only four years of age he lost his father, and the care of his education devolved upon his uncle, who communicated to him his own ardent love of classical learning. His academical studies he completed at Utrecht, where in 1734 he took the degree of doctor of laws, having previously written and defended a dissertation *De Jure Annulorum aureorum*, which has been thought worthy of being reprinted in the collection of Oelrichs.⁵ In 1736 he was nominated professor of elo-

¹ Of his own habits of life, Burman has favoured us with some account in his *Gazettier Menteur*, p. 164.

² Johnson's Works, vol. iv. p. 489.

³ Casp. Burmanni Trajectum eruditum, p. 50.

⁴ Thesaurus Dissertationum juridicarum in Academiis Belgicis habitarum, vol. ii. tom. i. p. 199.

⁵ Biographie Universelle, tom. vi. p. 333.

quence and history in the university of Franeker, in the room of Wesseling, who had been removed to Utrecht. The chair of poetry was in 1741 added to his other appointments; but in the course of the following year he accepted of an invitation to the Athenæum of Amsterdam, where he became professor of history, eloquence, the Greek language, and poetry, keeper of the public library, and visitor of the Latin schools. In his literary character he bore a considerable resemblance to his more celebrated uncle, and was evidently a man of extensive learning.¹ He published several detached orations, and other tracts, and an ample collection of his Latin poems. "Petri Burmanni Secundi Poematum libri quatuor." Lugd. Bat. 1774, 4to. "Carminum Appendix." Lugd. Bat. 1779, 4to. He edited several of the classics on a plan similar to that commonly adopted by his uncle. We have already mentioned the edition of Virgil, completed by his learned labour, and must now continue the enumeration of his classical publications. "Anthologia veterum Latinorum Epigrammatum et Poematum, sive Catalecta Poetarum Latinorum." Amst. 1759-73, 2 tom. 4to. "Aristophanis Comædiæ undecim Græce et Latine." Lugd. Bat. 1760, 2 tom. 4to. "Claudii Claudiani Opera." Amst. 1760, 4to. "Ciceronis (vel incerti auctoris) Rhetoricorum ad Herennium libri quatuor, et de Inventione libri duo." Lugd. Bat. 1761, 8vo. "Propertii Elegiarum libri IV." Traj. ad Rhen. 1780, 4to. This last work, which he did not himself bring to a conclusion, was conducted through the press by Van Santen, an elegant and correct scholar, who, under the name of Santenius, is well known to those who are acquainted with the literary history of that age. At an earlier period, Burman had published a modern poet in the same elaborate and splendid manner. "Petri Lotichii Secundi Opera omnia." Amst. 1754, 2 tom. 4to. He likewise undertook the task of editing the works of some modern critics. "Henrici Valesii Emendationum libri V. et de Critica libri duo," &c. Amst. 1740, 4to. "Nicolai Heinsii Adversariorum libri IV." &c. Harlingæ, 1742, 4to. Of his personal history, a few particulars remain to be told. He was thrice married. About a year before his death, he resigned his professorship, and having received a liberal pension from the curators of the Athenæum, he retired to his villa at Santhorst, in the hope of long enjoying literary repose; but having been struck with apoplexy, he expired on the 24th of June 1778. He appears to have been a person of a disposition sufficiently irritable: he was from time to time involved in various strifes and contentions; and his quarrels with a Dutch and a German professor, Saxius and Klotz, gave occasion to many invectives in the Latin, Dutch, and German languages.² According to the testimony of his adversaries, he was not remarkable for his sobriety. To this alleged failing Klotz alludes in the following ludicrous verses, written in the character of the schoolmaster of Santhorst.

O cælum! noster dominus,
Petrus Burmannus Secundus,
Est mortuus, ut unus mus.

Quid nos incipiamus?
Cum quo nos nunc bibamus,

Ni Petrum nostrum dominum, ni Petrum habeamus?

Habebat multos cyathos,
Habebat scyphos vitreos,
Et calices argenteos.

Sic est, sic omnia sunt vana,
Sic vita aufugit humana,
Discessit noster dominus, disrumpitur ut rana.

Ille bibebat fortiter,
Et tonans terribiliter,
Exhauriebat bis et ter
Unam magnam lagenam,
Quam dicebat Hippocrenam,
Nunc dedit noster dominus, nunc dedit morti pœnam.³

Although it certainly is not safe to take any person's character from his enemies, yet even by his enemies a very sober man will not often be accused of intemperance. (x.)

BURNET, THOMAS, a distinguished writer, was born at Croft in Yorkshire about the year 1635, but is supposed to have been descended of a Scotch family. His early education he received at the free-school of Northallerton, in the same county, under Thomas Smelt, who used to propose him as an example to the rest of his scholars. On the 26th of June 1651, he was admitted a pensioner of Clare Hall at Cambridge, under the tuition of Tillotson, who continued to remember him with kindness; but in the year 1654, he removed to Christ's College, on the election of Dr Cudworth to the mastership, and there he obtained a fellowship in the year 1657. In 1661 he became senior proctor of the university. He was successively domestic tutor to Charles duke of Bolton, and to James earl of Ossory, afterwards duke of Ormonde, grandson to the first duke; and by the interest of the latter nobleman he was chosen master of the Charter-house in 1685. Among the electors, some of the bishops opposed him on account of his wearing a lay-habit; but the duke was satisfied that he possessed the more essential qualifications of a life and conversation suitable to his clerical character. After this appointment, he took the degree of D.D. In his capacity of master, he made a noble stand against the admission of a papist named Andrew Popham, as a pensioner of the house: on the 26th of December 1686, the king addressed to the governors a letter dispensing with the statutes; but the opposition of the master being vigorously supported by other governors, James deemed it prudent to desist from this illegal attempt.

Dr Burnet had already published his *Telluris Theoria sacra*. Lond. 1681, 4to. This work attracted an unusual share of the public attention, and he was afterwards encouraged to exhibit it in an English dress. His *Sacred Theory of the Earth* was printed in folio, the first part in 1684, and the conclusion in 1689. Addison commended the author in a Latin ode. His fanciful theory was however attacked by Dr Keill, Mr Whiston, and Mr Warren, to all of whom he returned an answer. He had now acquired a high reputation as a man of talents; and after the revolution, he was introduced at court by Archbishop Tillotson, whom he succeeded as clerk of the closet to King William.⁴ He seemed already to be on the direct road to much higher preferment, when he suddenly marred his own prospects by the publication of a learned and ingenious work, entitled *Archæologiæ Philosophicæ: sive Doctrina antiqua de Rerum Originibus*. Lond. 1692, 4to. The mode in which he discussed the history of the fall of man, excited a great clamour against him; and the king was obliged to remove him from his office at court. Of this book an English translation was executed by Mr Foxton. Lond. 1729, 8vo. Dr Burnet next published

¹ "Habebat enim cum ipse maximam doctrinæ copiam, tum vero litteratam suppellectilem ex libris virorum doctorum ineditis tantam quantam privatorum quidem hominum haud scio an nemo unquam habuerit." (Wyttenbachii *Opuscula*, tom. i. p. 136. Lugd. Bat. 1821, 2 tom. 8vo.)

² Harlesius de Vitis Philologorum, vol. i. p. 114.

³ Funus Petri Burmanni Secundi, edidit Christianus Adolphus Klotzius, p. 61. Altenburgi, 1762, 8vo.

⁴ Birch's Life of Tillotson, p. 278. Lond. 1752, 8vo.

Burnet. "Remarks upon an Essay concerning Human Understanding, in a Letter address'd to the Author." Lond. 1697, 4to. "Second Remarks, &c. being a Vindication of the first Remarks against the Answer of Mr Locke, at the end of his Reply to the Lord Bishop of Worcester." Lond. 1697, 4to. "Third Remarks," &c. Lond. 1699, 4to. These remarks were answered by Catherine Trotter, afterwards Mrs Cockburn, in her "Defence of Mr Locke's Essay," written when she was twenty-three years of age, and printed at London in 1702. He died at the Charter-house on the 27th of September 1715, at a very advanced age. Two of his works were published several years after his death. *De Fide et Officiis Christianorum Liber posthumus.* Lond. 1722, 4to. *De Statu Mortuorum et Resurgentium Tractatus.* Lond. 1723, 4to. Of the first of these works, there are several other editions, one of which was published by Dr Teller of Berlin. Halæ Magdeburg. 1786, 8vo. The second has likewise been more than once reprinted; and two English translations were published by Matthias Earbery and John Dennis. The author was evidently a man of genius and learning; but his fancy being sometimes more vigorous than his judgment, he is not on all occasions a very safe guide. In this work he maintains the doctrine of the middle state, the Millennium, and the limited duration of future punishment. Muratori, an Italian writer of great eminence, published copious animadversions upon it, under the subsequent title: "De Paradiso Regnique Cælestis Gloria, non expectata Corporum Resurrectione, Justis a Deo conlata; adversus Thomæ Burneti Britanni Librum de Statu Mortuorum." Veronæ, 1738, 4to. The name of Burnet appears in the following publication, but his only contribution consists of a few pages translated from his treatise on the faith and duties of Christians: "The Judgment of Dr Thomas Burnet, late Master of the Charter-House, concerning the Doctrine of the Trinity; and the Judgment of Dr Samuel Clarke, late Rector of St James's, concerning 1. the Satisfaction, 2. the Merits, 3. the Mediation and Intercession of Christ, 4. the ordinary Influence and Assistance of the Holy Spirit, 5. the two Sacraments. With a preface concerning Mr Lock, Sir Isaac Newton, and Mr Wollaston." Lond. 1732, 8vo. (x.)

BURNET, *Gilbert*, bishop of Salisbury, was born at Edinburgh in 1643, but was descended of an ancient family in the county of Aberdeen. His father being bred to the law, was, at the restoration of King Charles II., appointed one of the lords of session, by the title of Lord Crimond, as a reward for his constant attachment to the royal party during the civil wars. Gilbert, the youngest son of his father, was instructed by him in the Latin tongue; and at ten years of age he was sent to Marischal College, Aberdeen, where he was admitted A. M. before he was fourteen years of age. His own inclination led him to the study of the civil and feudal law; and he used to say that it was from this study he had received more just notions concerning the foundations of civil society and government, than those which some divines maintain. He afterwards changed his views, and, to the great satisfaction of his father, began to apply to divinity. He received ordination before the age of eighteen; and Sir Alexander Burnet, his cousin-german, offered him a benefice, but he refused to accept of it.

In 1663, about two years after the death of his father, he came into England; and after six months stay at Oxford and Cambridge, returned to Scotland; which he soon left again to make a tour of some months, in 1664, in Holland and France. At Amsterdam, by the help of a Jewish

rabbi, he perfected himself in the Hebrew language; and likewise became acquainted with the leading men of the different persuasions tolerated in that country, Calvinists, Arminians, Lutherans, Anabaptists, Brownists, Papists, and Unitarians; among each of which sects he used frequently to declare he met with men of such unfeigned piety and virtue, that he became fixed in a strong principle of universal charity, and an invincible abhorrence of all severities on account of religious dissensions.

Upon his return from his travels, he was admitted minister of Saltoun; in which station he served five years in the most exemplary manner. He drew up a memorial, in which he took notice of the principal errors in the conduct of the Scottish bishops, which he observed not to be conformable to the primitive institution; and sent a copy of it to several of them. This exposed him to their resentments; but to show he was not actuated by a spirit of ambition, he led a retired course of life for two years, which so endangered his health that he was obliged to abate his excessive application to study. In the year 1668 he was appointed professor of divinity in the university of Glasgow; and, according to the usual practice, he read his lectures in the Latin language. It was apparently at this period that he laid the chief foundation of that theological learning for which he became so distinguished. In 1669 he published his "Modest and free Conference between a Conformist and Nonconformist." He became acquainted with the Duchess of Hamilton, who communicated to him all the papers belonging to her father and her uncle; upon which he drew up the "Memoirs of the Dukes of Hamilton," afterwards printed at London, in folio, in the year 1677. The Duke of Lauderdale, hearing he was engaged in this work, invited him to London, and introduced him to King Charles II. He returned to Scotland, and married Lady Margaret Kennedy, daughter of the Earl of Cassilis, a lady of great knowledge, and highly esteemed by the Presbyterians, to whose sentiments she was strongly inclined.¹ As there was some disparity in their ages, that it might be sufficiently evident that this match was wholly owing to inclination, and not to avarice or ambition, the day before their marriage he delivered to the lady a deed, by which he renounced all pretensions to her fortune, which was very considerable, and must otherwise have fallen into his hands, she herself having no intention to secure it. His "Vindication of the Authority, Constitution, and Laws of the Church and State of Scotland," was printed at Glasgow, in octavo, in the year 1673. This was considered as so material a service to the government, that he was again offered a bishopric, with a promise of the next vacant archbishopric; but he did not accept of it, because he could not approve of the measures of the court, the great view of which he perceived to be the advancement of popery. The publication itself was one of those which the author could not afterwards recollect with much satisfaction.

His intimacy with the Dukes of Hamilton and Lauderdale procured him frequent messages from the king and the Duke of York, who had conversations with him in private. But Lauderdale, who was the most unprincipled man of the age, conceiving a resentment against him on account of the freedom with which he spoke to him, represented at last to the king that Dr Burnet was engaged in an opposition to his measures; and on his return to London he perceived that these suggestions had entirely deprived him of the king's favour, though the Duke of York treated him with greater civility than ever, and dissuaded him from going to Scotland. He accordingly resigned his pro-

¹ Some degree of attention has lately been directed to this lady in consequence of the publication of a collection of *Letters from Lady Margaret Burnet to John Duke of Lauderdale.* Edinb. 1828, 4to.

Burnet. fessorship at Glasgow, and settled in London. About this time the living of Cripplegate being vacant, the dean and chapter of St Paul's (in whose gift it was), hearing of his circumstances, and the hardships which he had undergone, made him an offer of the benefice; but, as he had been informed of their first intention of conferring it on Dr Fowler, he generously declined it. In 1675, at the recommendation of Lord Hollis, whom he had known in France as ambassador at that court, he was by Sir Harbottle Grimstone, master of the rolls, appointed preacher at the Rolls chapel, notwithstanding the opposition of the court; and he was soon afterwards chosen lecturer at St Clement's, and became one of the most popular preachers in town. The first volume of his *History of the Reformation of the Church of England* was published in folio in 1681, the second in 1683, and the third in 1715. For this great work he received the thanks of both houses of parliament. Of the first two volumes he published an abridgment in the year 1683.

Dr Burnet about this time happened to be sent for to a woman in sickness, who had been engaged in an amour with the Earl of Rochester. The manner in which he treated her during her illness gave that profligate nobleman a great curiosity for being acquainted with him; and during a whole winter, he spent one evening of the week with Dr Burnet, who discussed with him all those topics upon which sceptics and men of loose morals attack the Christian religion. The happy effects of these conferences occasioned the publication of his account of the life and death of that nobleman. In 1682, when the administration was changed in favour of the Duke of York, being much resorted to by persons of all ranks and parties, in order to avoid returning visits, he built a laboratory, and for above a year pursued a course of chemical experiments. Not long after he refused a living of three hundred pounds a year offered him by the Earl of Essex, on the terms of his not residing there, but in London. When the enquiry concerning the popish plot was on foot, he was frequently sent for and consulted by King Charles with relation to the state of the nation. His majesty offered him the bishopric of Chichester, then vacant, if he would engage in his interests; but he refused to accept it on these terms. He preached at the Rolls till 1684, when he was dismissed by order of the court.

About this period he published various works, among which we must not overlook the following seven. "Some Passages of the Life and Death of John Earl of Rochester." Lond. 1680, 8vo. "The Life and Death of Sir Matthew Hale, Kt. sometime Lord Chief Justice of his Majesties Court of Kings Bench." Lond. 1682, 8vo. "The History of the Rights of Princes in disposing of Ecclesiastical Benefices and Church Lands." Lond. 1682, 8vo. "The Life of William Bedell, D. D. Bishop of Kilmore in Ireland." Lond. 1685, 8vo. "Reflections on Mr Varillas's History of the Revolutions that have happened in Europe in matters of Religion, and more particularly on his ninth book, that relates to England." Amst. 1686, 12mo. "A Defence of the Reflections on the ninth book of the first volumn of Mr Varillas's History of Heresies; being a Reply to his Answer." Amst. 1687, 12mo. "A Continuation of Reflections on Mr Varillas's History of Heresies, particularly on that which relates to English Affairs in his third and fourth tomes." Amst. 1687, 12mo. He bore a very conspicuous part in the controversy which at that time was so ably maintained against the papists; and

a complete catalogue of his works would occupy no small space. The following translations deserve to be mentioned in this very brief and inadequate notice. "Utopia, written in Latin by Sir Thomas More, Chancellor of England: translated into English." Lond. 1685, 8vo. "A Relation of the Death of the primitive Persecutors, written originally in Latin by L. C. F. Lactantius: Englished by Gilbert Burnet, D. D. to which he hath made a large preface concerning persecution." Amst. 1687, 12mo.

On King James's accession to the throne, having obtained leave to quit the kingdom, he first went to Paris, and lived in great retirement, till, contracting an acquaintance with Brigadier Stoupe, a Protestant gentleman in the French service, he made a tour with him into Italy. He met with an agreeable reception at Rome. Pope Innocent XI. hearing of his arrival, sent the captain of the Swiss guards to acquaint him he would give him a private audience in bed, to avoid the ceremony of kissing his holiness's slipper; but Dr Burnet excused himself as well as he could. Here, with more zeal than prudence, he engaged in some religious disputes; and, on receiving an intimation from Prince Borghese, he found it necessary to withdraw from this stronghold of priestcraft, and pursued his travels through Switzerland and Germany. He afterwards came to Utrecht, with an intention to settle in some of the seven provinces. There he received an invitation from the prince and princess of Orange (to whom their party in England had recommended him) to come to the Hague, and of this invitation he accepted. He was soon acquainted with the secret of their councils, and advised the preparation of a fleet in Holland sufficient to support their designs and encourage their friends. This, and the account of his travels,² in which he endeavoured to blend popery and tyranny together, and represent them as inseparable, with some papers reflecting on the proceedings of England, that came out in single sheets, and were dispersed in several parts of England, of most of which Dr Burnet owned himself the author, alarmed King James, and were the occasion of his writing twice against him to the princess of Orange, and insisting, by his ambassador, on his being forbidden the court; which, after much importunity, was done, though he continued to be trusted and employed as before, the Dutch minister daily consulting him. To put an end to these frequent conferences with the ministers, a prosecution for high treason was commenced against him both in England and Scotland; but receiving the intelligence before it reached the states, he avoided the storm, by petitioning for, and obtaining without any difficulty, a bill of naturalization, in order to his intended marriage with Mary Scott, a Dutch lady of considerable fortune, who, with the advantage of birth, united those of a fine person and understanding.

After his marriage with this lady, being legally under the protection of Holland, when Dr Burnet found King James plainly subverting the constitution, he omitted no method to support and promote the design which the prince of Orange had formed of delivering Great Britain; and, having accompanied him in quality of chaplain, he was in the year 1689 advanced to the see of Salisbury. He declared for moderate measures with regard to the clergy who scrupled to take the oaths, and many were displeased with him for declaring for the toleration of nonconformists. As my lord of Salisbury, says the Earl of Shaftesbury, "has done more than any man living for the good and

¹ "Which," says Dr Johnson, "the critick ought to read for its elegance, the philosopher for its arguments, and the saint for its piety." (*Lives of English Poets*, vol. i. p. 303.)

² Some Letters, containing an Account of what seemed most remarkable in Switzerland, Italy, &c. written by G. Burnet, D. D. to T. H. R. B. Rotterdam, 1686, 8vo.

Burnet. honour of the church of England and the reform'd religion, so he now suffers more than any man from the tongues and slander of those ungrateful church-men; who may well call themselves by that single term of distinction, having no claim to that of Christianity or Protestant, since they have thrown off all the temper of the former, and all concern or interest with the latter." The same noble writer has elsewhere mentioned him in the following terms of commendation: "The bishop of Salisbury's Exposition of the Articles is, no doubt, highly worthy of your study. None can better explain the sense of the church, than one who is the greatest pillar of it since the first founders; one who best explain'd and asserted the reformation its self; was chiefly instrumental in saving it from popery before and at the Revolution; and is now the truest example of laborious, primitive, pious, and learned episcopacy."¹

His pastoral letter concerning the oaths of allegiance and supremacy to King William and Queen Mary, 1689, happening to touch upon the right of conquest, gave such offence to both houses of parliament, that it was ordered to be burnt by the hands of the common executioner. He soon afterwards published a very valuable work, entitled *A Discourse of the Pastoral Cure*. Lond. 1692, 4to. In 1698 he lost his wife by the small-pox; and as he was almost immediately after appointed preceptor to the Duke of Gloucester, of whose education he took great care, this employment, and the tender age of his children, induced him the same year to supply her loss by a marriage with Mrs Berkeley, a widow, who was eldest daughter of Sir Richard Blake. In 1699 he published his *Exposition of the thirty-nine Articles*; which occasioned a representation against him in the lower house of convocation in the year 1701, but he was vindicated in the upper house. His speech in the House of Lords in 1704 against the bill to prevent occasional conformity, was severely attacked. He formed a scheme for augmenting the small livings; which he pressed forward with such success, that it ended in an act of parliament passed in the second year of Queen Anne, for the augmentation of the livings of the poor clergy. He died in 1715, and was interred in the church of St James, Clerkenwell, where a monument was erected to his memory.

Bishop Burnet's *History of his own Time*, consisting of two large volumes in folio, was not published till several years after the author's death; the first volume appeared in 1724, and the second in 1734. An account of his life was added by his youngest son Sir Thomas Burnet, one of the judges of the court of common pleas. The history itself was not printed without mutilations; but after an interval of nearly a century, an edition, containing all the passages which had formerly been suppressed, was published under the superintendence of the learned Dr Routh. Oxford, 1823, 6 vols. 8vo. This is a work of great and intrinsic value: it exhibits many curious and interesting delineations of character, and many striking views of the causes and progress of events. The first volume, which relates to the reigns of Charles II. and his brother James, we consider as the more interesting of the two. His materials are not always very carefully digested, and his style is sometimes supposed to be too familiar; but these defects are abundantly compensated by the copiousness of his information, the benevolence of his sentiments, and the earnestness of his manner. The *Conclusion* displays superior dignity of composition, and cannot be perused without the most favourable impression of the author's intellectual attainments and moral worth. He uniformly evinces his attachment to the cause of freedom, nor is this

the least conspicuous part of his character: the church of England, in its collective capacity, has always been hostile to civil as well as religious liberty; and its annals exhibit very few names which tend to remove the general stigma. Those of Burnet and Hoadley ought never to be forgotten.

BURNET, James, Lord Monboddo, a senator of the college of justice, was born about the year 1714. He was the son of Mr Burnet of Monboddo in Kincardineshire. After passing through the usual course of school education, he prosecuted his studies at the universities of Aberdeen, Edinburgh, and Leyden, with distinguished reputation. He was admitted an advocate in 1737; and on the 12th of February 1767, he was raised to the bench by the title of Lord Monboddo.

A journey to London became a favourite amusement of his periods of vacation from the business of the court; and for a time he made this journey once a year. A carriage, a vehicle that was not in common use among the ancients, he considered as an engine of effeminacy and sloth, which it was disgraceful for a man to make use of in travelling. To be dragged at the tail of a horse, instead of mounting upon his back, seemed, in his eyes, to be a truly ludicrous degradation of the genuine dignity of human nature: in all his journeys, therefore, between Edinburgh and London, he was wont to ride on horseback, with a single servant attending him. He continued this practice, without finding it too fatiguing for his strength, till he was upwards of eighty years of age.

Lord Monboddo is well known to the world as a man of letters. His first publication was *The Origin and Progress of Language*, in two vols. 8vo, 1773, which were followed by four more volumes, the last being published not long before his death. In this work, intended chiefly to vindicate the honour of Grecian literature, he ascribes the origin of alphabetical writing to the Egyptians; and strenuously maintains that the ourang-outang is a class of the human species, and that his want of speech is merely accidental. He also endeavours to establish the reality of the existence of mermaids, and other fictitious animals. He was induced to undertake another work for the purpose of defending the cause of Grecian philosophy, and published, in five vols. 4to, a work entitled *Ancient Metaphysics*, which, like the other, is remarkable for a surprising mixture of erudition and genius, with the most absurd whim and conceit.

As a judge his decisions were sound, upright, and learned, marked with acute discrimination, and free from those paradoxes and partialities which appear in his writings. He attended his judicial duty with indefatigable diligence till within a few days of his death, which happened at his house in Edinburgh on the 26th of May 1799, at the advanced age of eighty-five.

BURNHAM, a market-town of the hundred of Brothcross, in the county of Norfolk, 128 miles from London, near the sea shore. The market is held on Monday. It is celebrated as the birth-place of Admiral Lord Nelson. The inhabitants amounted in 1801 to 743, in 1811 to 845, and in 1821 to 937.

BURNING, the action of fire on some pabulum or fuel. **BURNING**, in antiquity, a way of disposing of the dead, much practised by the Greeks and Romans, and still retained by several nations in the East and West Indies. The antiquity of this custom reaches as high as the Theban war, where we are told of the great solemnity accompanying this ceremony at the pyre of Menæacus and Archemorus, who were contemporary with Jair, the eighth judge

¹ Shaftesbury's *Letters*, p. 23, 37.

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of Israel. Homer abounds with funeral obsequies of this nature. In the interior regions of Asia, the practice was of very ancient date, and its continuance long; for we are told, that in the reign of Julian, the king of Chionia burnt his son's body, and deposited the ashes in a silver urn. Coeval almost with the first instances of this kind in the East, was the practice in the western parts of the world. The Herulians, the Getes, and the Thracians, had all along observed it; and its antiquity was as great among the Celtae, Sarmatians, and other neighbouring nations. This custom seems to have arisen out of friendship to the deceased, whose ashes were preserved, as we preserve a lock of hair, a ring, or a seal, which had been the property of a departed friend.

Kings were burnt in cloth made of the asbestos stone, that their ashes might be preserved pure from any mixture with the fuel and other matters thrown on the funeral pile. The same method is still observed with the princes of Tartary. Among the Greeks, the body was placed on the top of a pile, on which were thrown divers animals, and even slaves and captives, besides unguents and perfumes. In the funeral of Patroclus we find a number of sheep and oxen thrown in, then four horses, followed by two dogs, and lastly by twelve Trojan prisoners. The like is mentioned by Virgil in the funerals of his Trojans; where, besides oxen, swine, and all manner of cattle, we find eight youths condemned to the flames. The first thing was the fat of the beasts, wherewith the body was covered, that it might consume the faster; it being reckoned a great felicity to be quickly reduced to ashes. For the like reason, where numbers were to be burnt at the same time, care was taken to mix with them some of humid constitutions, and therefore more easily to be inflamed. Thus we are assured by Plutarch and Macrobius, that for every ten men it was customary to put in one woman. Soldiers

usually had their arms burnt with them. The garments worn by the living were also thrown on the pile, with other ornaments and presents; a piece of extravagance which the Athenians carried to so great a height, that some of their lawgivers were forced to restrain them, by severe penalties, from defrauding the living by their liberality to the dead. In some cases, burning was expressly forbidden among the Romans, and even looked upon as the highest impiety. Thus, infants who died before the breeding of teeth were entombed unburnt in the ground, in a particular place set apart for this purpose. The same thing was practised in regard to persons struck dead with lightning, who were not allowed to be burnt again. Some say that burning was also denied to suicides. The manner of burning among the Romans was not unlike that of the Greeks. The corpse, being brought out without the city, was carried directly to the place appointed for burning it; which, if it joined the sepulchre, was called *bustum*, if separate from it, *ustrina*, and there laid on the *rogus* or *pyra*, a pile of wood prepared for burning it, and built in the shape of an altar, but of different height, according to the quality of the deceased. The wood used was commonly that of such trees as contain most pitch or resin; and whatever kind was used, they split it, for the more easy catching fire; while round the pile they set cypress trees, probably to hinder the noisome smell of the corpse. The body was not placed on the bare pile, but on the couch or bed whereon it lay; and when this was done, the next of blood performed the ceremony of lighting the pile; which they did with a torch, turning their faces all the while the other way, as if it were performed with reluctance. During the ceremony, decursions and games were celebrated; after which came the *ossilegium*, or gathering of the bones and ashes; also washing, anointing, and depositing them in urns.

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BURNING GLASSES, OR BURNING MIRRORS,

THE name of certain glasses or mirrors which have the property of inflaming combustible substances by the action of the sun's rays, being so formed as to collect all the rays which fall over their whole surface into a single point or spot, more or less distant, according to the form of the glass. In this point the natural heat of the sun is found to be so augmented, owing to such a multitude of rays being all concentrated in so narrow a space, that it produces an intense temperature, and such as is quite sufficient, even with very ordinary glasses, to inflame wood or other combustible substances. There is always one particular point at a certain distance from the glass where the heat is the greatest. If we place the burning body nearer the glass the heat diminishes, till it will no longer take fire; and if we place it farther from it, the same effect takes place. Hence this point, where the heat is the most intense, has received the name of the *focus* of the glass.

This property of burning glasses, however familiar it may now appear, is certainly very remarkable, and must, at the time of its invention, have excited no small degree of astonishment and of interest, from the striking nature of the effect, and from the uses to which it might be applied. The operation is now perfectly understood from the principles of optics, and is indeed extremely simple. See OPTICS. The rays of light are collected either by refraction in passing through a transparent glass, or by reflection from the polished surface of a mirror. Burning glasses are hence divided into two kinds,—refracting glasses, which can only be made of glass or other transparent substance; and reflecting glasses, which are either

made of glass silvered behind, or of polished metal, or any other reflecting substance. Reflectors of polished metal are generally termed *specula*. In the former kind the glasses are of a convex form, and collect the rays of the sun into a focus behind the glass, as at fig. 1, Plate CXLI.; each ray, as it strikes more or less obliquely on the surface of the glass, being more or less bent out of its natural course by the refractive medium, so that they are all made to converge to one point or focus of refraction. Reflecting glasses, again, are all concave, and the rays of the sun are collected into a focus in front of the mirror by reflection; each ray, as it strikes more or less obliquely on the surface of the mirror, being reflected back, but at the same time inclined to the centre so that they are all made to converge to a point or focus of reflection in a similar manner, as at fig. 2.

In both these cases it is by the peculiar shape or figure of the glass or mirror that the convergence of all rays to one point is produced; and to ascertain therefore the figure which would do this most perfectly becomes an important object in the construction of glasses, and is, besides, a curious mathematical problem. In the case of refracting glasses, where we have a double surface, one on each side of the glass, it was first shown by the celebrated Descartes, that a glass having its exterior surface convex, and a portion of an elliptic curve, while its interior surface was concave, and formed a portion of a circle, would cause parallel rays, or those of the sun, to converge to a perfect focus, as at fig. 3, where the exterior surface of the lens BAC forms a portion of an ellipse, whose

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Glasses.

Focal
image.

greater axis AX is to the distance between the foci Ff , as the index of refraction is to unity, and a circle whose centre is at F . Various other forms have been proposed, but, owing to the great difficulty of forming glasses of these compound curves, it was found more convenient in practice to rest content with the exterior surface BAC , a portion of the simple curve of the circle or sphere, particularly as in large glasses, or those of slight convexity, the sphere approaches very nearly to that of the ellipse. Each side of the glass, therefore, is carefully turned and ground into the portion of a sphere, forming together what is termed a *lens*; and the greater the radius of convexity is, the greater is the distance of the focus from the glass. It happens by a curious coincidence, that in glass the focal distance of parallel rays, usually termed the *principal focus* of the lens, in a double convex lens, is just equal to the radius of convexity. In every burning glass, therefore, of this description, it is easy to find the focus by measuring from the centre of the lens a distance equal to the radius of curvature. In the case of burning mirrors, the true figure for converging the rays to a perfect focus is that of the parabola; a form which is frequently constructed, the mirrors being either turned or hammered out of metal, and the figure therefore more readily attained than in glass. The focal distance is always equal to the radius of the concavity at the centre of the mirror. Hence in large mirrors of a shallow concavity, or with a large radius, the spherical form will approach very nearly to that of the parabola, and will therefore produce very nearly the full effect of it. The focus may also be found practically by holding the glass up to the sun, and observing where the concentration of the light is the greatest. In doing this a remarkable circumstance is observed. However perfect the figure of the glass, the rays in the focus are never converged to a mathematical point; they are always diffused over a certain space, forming a spot of determinate magnitude. The reason of this will appear very obvious, when we consider that the sun presents a very sensible magnitude, even at the enormous distance at which he is viewed. The rays from different parts of the body, from the opposite limbs, for instance, instead of being parallel, subtend sensible angles. Though all the rays therefore from any one point in the sun are sensibly parallel to each other, and those which fall on different parts of the glass from this single point are all converged to a mathematical point in the focus, this is not the case with rays coming from different points of the sun. These not being parallel, cannot by any means be thrown together in the focus, but each to a distinct point corresponding to that from which it issues in the sun, whether by refraction or reflection, so as to form on the whole an image or figure of the sun, subtending the same angle at the glass as the sun does. This is evident from an inspection of figures 4 and 5, where the rays from each limb by refraction cross one another in the centre of the glass, and again diverge, forming the boundary of the focal image at the same angle as the image itself, or by reflection meet and diverge in returning at the same angle. Hence it follows that the magnitude of the focal image will depend entirely on the focal distance, and in no respect on the magnitude of the glass or mirror. The greater the focal distance the larger will the image be. In every case it will be proportional to the sine of $32'$, the angle at which the sun subtends at the glass; and hence the focal diameter will be very nearly $\frac{1}{100}$ th part of the focal distance. Hence the reason of a very curious fact, that in any large glass or mirror, though we were to cut off a zone from the exterior circumference, it would not alter in the least the magnitude of the focal image; it would only diminish the intensity of the light. Whether the figure of the glass also

be square, or circular, or elliptical, or any other shape, the figure of the image will be invariably a circle. Such then is the limit of concentration even for the most perfect glasses; and hence we see that it is not absolutely necessary to have the glasses of the perfect figure required by theory, at least it is not of such essential consequence as in the case of telescopes or microscopes, where the distinctness of the image is of as much consequence as the concentration of rays. Here, though the image be ever so confused, seeing it is heat only which we want, it is of no consequence, so that they fall within the limits of the focus. If the spherical figure, then, has been adapted with success to the nice purposes of vision, by using spherical lenses and reflectors of gentle curvature, much more may it suffice for burning glasses, where any imperfections of this kind are of less importance; the only effect of these being to produce in the focus a somewhat less powerful concentration of the rays. In practice, however, the difference with small glasses, such as four, five, or six inches diameter, and focal distances of two or three feet, is really hardly measurable. Even with very large glasses it is far from being considerable. In the great burning glasses of Tschirnhausen, for example, three or four feet in diameter, the focal distance was twelve feet; and hence a perfect image of the sun should have been $\frac{144}{100}$ inches $= 1.44$ inches; and it was actually about an inch and a half. The famous lens of Parker had a focal distance of six feet eight inches; and hence the perfect image should have been 0.8 inches, and the actual burning focus was one inch diameter. In reflection, again, the mirror of Vilette had a focal length of about thirty-eight inches, and therefore an image by calculation of 0.38 inches; it was actually about the size of half a louis d'or.

In regard to the actual heating power of burning glasses, if this depended only on the concentration of the rays power it would be easily calculated. The degree of concentration is in every case proportional as the square of the diameter of the glass to the square of the diameter of the focal image. In an ordinary reading glass, therefore, say of two inches diameter and six inches focal distance, the focal diameter being thus 0.06, the concentration would be as four to .0036, or as one to 0.0009, or nearly 1000 times. No wonder, then, that such a glass should so readily produce inflammation. Even in some of the large burning glasses the actual concentration did not so much exceed this as might be imagined. In the compound burning glasses of Tschirnhausen the diameter of the first glass being three and four feet, and the focal diameter of the second glass only eight lines or two thirds of an inch, the concentration would be as 2304 and 1296 to 0.44, or 5184 times in the one case, and 2916 in the other. In Vilette's burning mirror the diameter was thirty inches, and the focal diameter about half an inch. The concentration would thus be 3600 times. But the most powerful of all these glasses is the compound one of Parker. In this the diameter of the first glass was thirty-two and a half inches, and the focal diameter of the second three eighths of an inch; hence the concentration was equal to 7168 times.

In order, however, to calculate the actual increase of Effect temperature, we must first know the effect of the sun's natural heat. The most accurate experiments on this subject are those made by Professor Leslie with his photometer, an instrument of great delicacy, peculiarly adapted for measuring the heat of the sun, as it is entirely free of any extraneous impression from the surrounding atmosphere. "In the latitude of Edinburgh," he says, "the direct impression of the sun at noon, during the summer solstice, amounts to 90° ($= 16.2$ Fahrenheit); but it regularly declines as his rays become more oblique. At the

Burning
Glasses.
Line of
concentration.

Heat power

Effect of the sun's natural heat

Burning Glasses.

altitude of 17° it is already reduced to one half; and at 3° above the horizon the whole effect exceeds not 1° . In the same parallel of latitude, the greatest force of the solar beams in the depth of winter measures only 25° ¹ ($\approx 4\frac{1}{2}$ Fahrenheit). Taking the average effect, then, at 10° , it would appear that the above reading glass would be capable of producing a heat of $10,000^{\circ}$, which is far above the melting point of brass, copper, silver, and lead. The glasses of Tschirnhausen would produce a heat of $29,160^{\circ}$ and $51,840^{\circ}$, the mirror of Vilette $36,000^{\circ}$, and Parker's glass the enormous heat of $71,680^{\circ}$, which is nearly double the highest heat measurable by Wedgwood's pyrometer.

Effect of concentration modified.

But the temperature due to the mere concentration of the rays will evidently be considerably modified, according as the accumulating heat is more or less rapidly dissipated from the focal point into the surrounding medium; and this will depend chiefly on the conducting power of the substance receiving heat, and of those with which it is in contact. This effect is observed, indeed, in the case of a body exposed to the natural heat of the sun. As the accumulating heat raises the temperature of the body, this causes a dispersion both by radiation and contact into the surrounding atmosphere, so that there will be a stream of heat continually escaping from the body, as well as one running in; and when the final temperature is attained, these two effects will exactly balance each other, the quantity dispersed being exactly equal to that which is received during the same time. Now, the quantity dispersed must evidently be proportional to the excess of temperature of the body above the surrounding atmosphere, and also to the surface exposed. Hence a slow conducting body exposed to the sun,—a ball of wood, for instance,—will acquire a higher temperature than a similar ball of copper. In the latter the heat will be quickly diffused over the whole mass, and dispersed into the atmosphere from every part of its surface: in the former it will pass very slowly through the mass, and accumulating more at one side, and having a smaller surface to disperse itself by, will produce there a greater elevation of temperature; or if the copper be surrounded by any slow conducting substance,—if it be bedded in a mass of charcoal or brick, the temperature acquired will be greater, as in the case of fruit-trees on a wall, the brick confining the heat, and causing a greater accumulation and a higher temperature, just as the damming up of any stream of water raises the level of the fluid. The same thing must take place with the rays of light concentrated by the burning glass. The temperature in the focus must continue rising until the dispersion of the heat from the focal point equals what is constantly received; and the more, therefore, this dispersion can be retarded by the interposition of slow conducting substances, the higher will the temperature rise. It has always been found, accordingly, that refractory metals, or stones, melt much more readily when laid in a mass of charcoal. This circumstance explains a fact first proved by Buffon, and invariably experienced in burning glasses, that, even with the same degree of concentration of rays, the effect will be much greater with a large focus than with a small one. The latter operating in a very narrow space, and dispersing the heat rapidly into the surrounding mass, there is little left for accumulation. In the former, the heat increasing as the square of the diameter, while the dispersion into the surrounding substance only increases merely as the diameter, much more remains to accumulate in the centre; and the central portion of the focus, indeed, being surrounded

by a zone almost as hot as itself, much less dispersion can take place, and the temperature, therefore, will rise much higher. If we take, for example, a glass two inches diameter, with a concentrating power of 300, and another six inches diameter of the same power, the one will inflame paper in two or three seconds, while the other will hardly accomplish it at all. These circumstances, therefore, greatly modify the effects of concentration, and serve to account for the very feeble powers of small glasses, and the intense heat of larger ones not greatly differing in concentrative action. The most powerful glass, for instance, ever constructed, was that of Parker, and yet its concentrative power was only seven times greater than that of an ordinary reading glass; and this is the reason also, as we shall see, that the reflecting mirrors of Buffon for burning at a distance produced such powerful effects, the concentration being small compared with that of single glasses, but the focal image much larger.

Such being the general principles of burning glasses and mirrors, we shall now describe some of the principal instruments of this kind which have been constructed, and their effects. The invention of mirrors or looking-glasses, constructed probably of polished brass, remounts to a very remote antiquity, as they are mentioned by Moses in the sacred writings. At what period they were employed in a concave form to concentrate the solar rays by reflection is not known, but it is very probable that mirrors of this kind were used to rekindle the vestal fires. Plutarch, in his life of Numa, 700 years before Christ, describes the *σκαψίται*, or dishes which were employed for this purpose, and which appear to have been concave segments of a sphere; and he states that the combustible matter was placed in the centre, meaning, no doubt, the focus or centre of concentrated rays. In the time of Socrates, 430 years before Christ, the manufacture of glass had made considerable progress; and it appears from a passage in one of the plays of Aristophanes, that the use of burning glasses was common. The author introduces Socrates as giving lessons in philosophy to Strepsiades, a citizen of Athens, and a man of low cunning. The subjects of these lessons are silly trifles, intended to make Socrates appear ridiculous. Strepsiades, after having asked him how he should avoid paying his debts, proposes the following expedient himself:—"Strepsiades, You have seen at the druggists that fine transparent stone with which they kindle fires? Socrates, You mean glass, do not you? Strepsiades, The very thing. Socrates, Well, what will you do with that? Strepsiades, When a summons is sent to me, I will take this stone, and, placing myself in the sun, I will melt all the writing of the summons at a distance." The writing, as we know, was traced on wax spread upon a more solid substance.

This description must refer to a burning glass by refraction. Several other ancient observations on the same phenomenon exist. Pliny mentions globes of glass or of crystal, which, being exposed to the sun, would burn clothes, or the flesh of a patient when cauterization was requisite. *Hist. Nat.* lib. xxxvi. and xxxvii. Lactantius, who lived about the year 303, says, "a globe of glass filled with water, and exposed to the sun, will kindle a fire even in the coldest weather." (*De Ira Dei.*)

But the most memorable account of burning glasses, and of their effects in all antiquity, and what has excited no small degree of speculation in succeeding times, is the Archimedes' extraordinary achievement ascribed to Archimedes, of setting fire to the Roman fleet engaged in the siege of

Burning Glasses.

¹ *Experimental Enquiry into the Nature and Propagation of Heat*, p. 440. Also, by the same author, *An Account of Experiments and Instruments depending on the relations of Air to Heat and Moisture*.

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Glasses.

Syracuse, "launching against it," as Buffon says, "the fire of the solar beams." This, if it can be proved, must, without doubt, be viewed as the most surprising effort of genius and practical skill which the history of human invention presents. By modern opticians, at the head of whom stood Descartes, the fact was long treated as fabulous, chiefly on account of its supposed impracticability; and no doubt this would be the case with single concave mirrors or reflectors, as they imagined Archimedes to have used, and which could not obviously be constructed of sufficient magnitude and focal distance to have any sensible effect. But if we suppose, as is far more probable, and as it is actually described by some authors, that the effect was produced by a number of plane mirrors arranged in a curve, and all uniting their rays in a focus, the impossibility of such a combination is by no means clear; and in fact its perfect practicability, first suggested by Anthemius, and rendered extremely probable by Kircher, was demonstrated by Buffon, and the apparatus actually constructed by him, so as to kindle wood and other inflammable substances at the distance of 200 yards. No doubt, therefore, can remain as to the possibility of producing the effects described. The only question now is in regard to the probability of the fact itself, and the evidence advanced for its support. In the first place, there is nothing improbable in the situation of the place; for Kircher, in his great zeal to throw light on this curious subject, actually made a voyage to Syracuse, in order to examine the situation of the hostile fleet, accompanied by his pupil Scholtus, and they were both satisfied that the ships of Marcellus could not have been more than thirty paces distant from the place where Archimedes might have stood; and in regard to an objection which has been stated, that the vessels might have moved out of the way of the glasses, this does not seem to have much weight, as a moment might have been chosen when they were off their guard, and the glass could have been turned so as to follow them to a certain extent; besides that, the vessels might have been at anchor, or even aground at the time, and not capable of moving away with sufficient expedition. Let us just consider, therefore, the evidence for the fact itself. On the one hand, we have Polybius, Livy, and Plutarch, all silent on the subject, affording certainly a strong proof against the fact, when we consider also that the two former describe so particularly the mechanical contrivances of Archimedes; on the other hand, it has been positively affirmed by Vero, Diodorus Siculus, and Pappus; and though the works of the latter, which speak of the siege of Syracuse, are now lost, they existed in the twelfth century, and the passages which speak particularly of the burning glass of Archimedes are quoted by Zonaras and Tzetzes, writers of that period, and who appear incapable of inventing such a story of themselves. Zonaras states that "Archimedes burnt the fleet of the Romans in an admirable manner, for he turned a certain mirror towards the sun, which received its rays. The air having been heated on account of the density and smoothness of the mirror, he kindled an immense flame, which he precipitated on the vessels which were in the harbour, and reduced them to ashes." He then adds that Proclus, taught by this example, burnt with mirrors of brass the fleet of Vitellius, who besieged Constantinople under the emperor Anastasius in the year 514. Tzetzes, referring to the same authorities, states, that "when the fleet of Marcellus was within bow shot, the old man (Archimedes) brought out a hexagonal mirror which he had made. He placed at proper distances from the mirror other smaller mirrors, which were of the same kind, and which were moved by means of their hinges and certain square plates of metal. He afterwards placed his mirrors in the midst of the solar

rays precisely at noon-day. The rays of the sun being reflected by this mirror, he kindled a dreadful fire on the ships, which were reduced to ashes at a distance equal to that of a bow-shot. Dion and Diodorus, who wrote the life of Archimedes, and several other authors, speak of this fact, but chiefly Anthemius, who wrote on the prodigies of mechanics. It is in these works that we read the history of the conflagration occasioned by the mirror of Archimedes."

This passage contains evidently a description of a combination of plane mirrors, so adapted and set to the position of the sun as to unite all the rays reflected from them into one focus. Besides these, we have the direct testimony, as above noticed, of Anthemius of Tralles, an eminent architect, and one besides deeply learned in the mathematical sciences, particularly mechanics. He flourished about the end of the fifth century, in the time of Justinian, with whom he was a favourite, and who employed him in the erection of various edifices, particularly the church of St Sophia at Constantinople, which he carried on for some time in conjunction with Isidore, and, after his death, finished himself. He was also a disciple of Proclus, from whom he may have received information regarding burning mirrors. In a fragment entitled *περί παραδόξων μηχανημάτων*, *Of Wonderful Machines*, and translated and illustrated by Dupuy, a member of the Academy of Belles Lettres in 1777, Anthemius treats particularly of the burning mirrors of Archimedes, on the effects of which he never seems to entertain any doubt. After acknowledging that it was universally admitted in his time that Archimedes had destroyed the Roman fleet by means of burning mirrors, Anthemius observes, "Let us, therefore, bring and collect at one point other different rays, by means of plain and similar mirrors, in such a manner that all these rays, united after reflection, may produce inflammation. This may be effected by means of several persons holding mirrors, which, according to the positions indicated, send the rays to one point."

"But, in order to avoid the embarrassment resulting from intrusting this operation to several persons (for we shall find that the matter intended to be burnt does not require less than twenty-four reflectors), the following construction may be followed: Let there be a hexagonal plain mirror, and other adjoining similar mirrors, attached to the sides of the hexagonal mirror by the smallest diameter, so that they may be moved on these lines by means of plates or bands applied, which unite them to each other, or by means of what are called hinges. If, therefore, we bring the surrounding mirrors into the same plane with the mirror in the centre, it is clear that all the rays will undergo a reflection similar and conformable to the common position of all the parts of the instrument. But if, the centre mirror remaining as it were immovable, we dexterously incline upon it all the other mirrors which surround, it is evident that the rays reflected by them will tend towards the middle of the place where the first mirror is directed. Repeat the same operation, and around the mirrors already described placing other similar mirrors, all of which may be inclined towards the central mirror, collect towards the same point the rays which they send, so that all these united rays may excite inflammation in the given spot."

"But this inflammation will take place better if you can employ for this purpose four or five of these burning mirrors, and even seven, and if they are all at the same distance from the substance to be burnt, so as that the rays which issue from them, mutually intersecting, may render the inflammation more considerable. For, if the mirrors are all in one place, the rays reflected will intersect at very acute angles, so that all the place around the axis

Burning
Glasses.

Testimony
of the
mir.

Burning Glasses. being heated, the inflammation will not take place at the single point given.

"It is therefore possible, by means of the burning mirrors just mentioned, to carry inflammation to a given distance. Those who have made mention of the mirrors constructed by the divine Archimedes, have not said that he made use of a single burning mirror, but of several; and I am of opinion that there is no other way of carrying inflammation to any distance."

Leonhard Digges. These testimonies are certainly very favourable, and the subject has been still further explained and illustrated by the labours of succeeding inquirers. About the end of the sixteenth century we find mention of a burning glass on the plan of that of Archimedes, in a work by our countryman Leonhard Digges, entitled *Pantometria*, published in London in 1571, and republished by his son Thomas Digges in 1591. In the preface to the second edition the latter observes, "Archimedes also (as some supposed), with a glasse framed by revolution of a section parabolically, fired the Roman naue in the sea, comming to the scige of Syracuse. But, to leaue these celestial causes, and things done of antiquitie, long agoe, my father hath at sundrie times, by the sunne beams, fired powder and discharged ordnance half a mile and more distante; which things I am the boulder to report, for that there are yet living diuerse of these his doings (*oculati testes*, eye-witnesses), and many other matters far more strange and rare, which I omit as impertinent to this place."

In the twenty-first chapter of the first book, the subject of burning glasses is resumed. "Some have fondly surmised that Archimedes burned the Roman naue with a portion of a section parabolical, artificiallye made to reflect and unite the sunne beames a great distance off; and for the construction of this glass, toke great peins with high curiositie, to unite large and many intricate demonstrations; but it is a mere fantasie, and utterly impossible with any one glass, whatseuer it be, to fire any thing only one thousand paces off, no, though it were an 100 foote over; marry true it is, the parabola, for his small distance, most perfectly doth unite beames, and most uehemently burneth, of all other reflecting glasses. But how by application of mo glasses to extend this unitie or concourse of beames in his full force, yea to augment and multiply the same, that the farder it is carried the more violently it shall pearse and burne. *Hoc opus hic labor est*, whercin God sparing life and the time which opportunitie serving, and minde to impart to my countrymen some such secrets, as hath, I suppose, in this our age been reueled to very few, no lesse seruing for the securitie and defence of our naturall countrey, than surely to be maruailed at of strangers."

A few years after the publication of the *Pantometria* of Leonhard Digges, our illustrious countryman Baron Napier of Merchiston drew up a list of "Secret inventions, profitable and necessary in these days for the defence of this island, and withstanding of strangers, enemies of God's truth and religion." The first and second of these inventions are burning mirrors, which are very briefly described in the following words:—

First, "The invention, proof, and perfect demonstration, geometrical and algebraical, of a burning mirror, which receiving of dispersed beams of the sun, doth reflect the same beams altogether united and concurring precisely in one mathematical point, in the which point most necessarily it engendereth fire; what an evident demonstration of their error who affirm this to be made a parabolic section. The use of this invention serveth for the burning of the enemy's ships, at whatsoever appointed distance."

Secondly, "The invention and sure demonstration of another mirror, which receiving the dispersed beams of

any material fire or flame, yieldeth also the former effect, and serveth for the like use."

It does not appear that Napier ever condescended to give any further account of these burning mirrors; for when he was solicited a short time before his death, by one of his most particular friends, "not to bury such excellent inventions in the grave with him," he replied, "that for the ruin and overthrow of man there were too many devices already framed, which, if he could make to be fewer, he would with all his might endeavour to do; and that therefore seeing the malice and rancour rooted in the heart of mankind will not suffer them to diminish the number of them, by any new conceit of his they should never be increased."

The next author whom we find treating on the subject Labours of the burning glasses of Archimedes, is the learned and indefatigable Kircher, whose zeal we have already mentioned as having led him to Syracuse to examine the practicability of the project on the spot, and who besides investigated the subject by a great variety of experiments. "He began with combining a number of parabolic specula; but this method was quickly abandoned, and he resorted to the use of plane mirrors. Having procured a number of plane and circular glasses, he placed them upon a wall, at such degrees of inclination that they all reflected the light of the sun to one point, and produced a considerable heat. His principal experiments, however, were made with five plain specula fixed in a frame, so that they collected the solar rays at the distance of more than one hundred feet. At this distance he produced a degree of heat which sufficiently convinced him, that by increasing the number of his mirrors, he could have consumed inflammable substances at a much greater distance. He informs us in his *Magica Catoptrica*, that the heat of the first reflection was different from that of direct light; that the light, when doubled, gave a very preceptible increase of heat; that it had the heat of a fire when tripled; that when quadrupled, the heat could still be endured; but that a five-fold reflection made the heat almost intolerable. From these results he concludes that a combination of plane mirrors was capable of producing more powerful effects than mirrors of a parabolic, hyperbolic, or elliptic form; and he entreats future mathematicians to prosecute the subject with a more numerous combination of plane specula."

But of all the authors who have laboured in this curious speculation, Buffon is the one who has thrown the clearest light on the subject; and, by the ingenuity, extent, and multiplicity of his experiments, has left little further to be accomplished by succeeding philosophers. Being soon convinced, like his predecessors, of the utter inefficiency of single mirrors, he then tried by experiment the powers of different plane surfaces in reflecting the sun's light, and found that glass, somewhat carefully polished and silvered behind, reflected more powerfully than the best polished metals, better even than what is employed for the specula of telescopes. He next found, by letting the direct light of the sun into a darkened room, and comparing it there with the reflected light from glass, that it only lost one half by reflection, which he judged of by causing one reflected light to cover another, when the two seemed together equal to the direct light. Thirdly, having received, at distances of one hundred, two hundred, and three hundred feet, the same reflected light from large glasses, he found it had lost almost nothing of its intensity by the thickness of the mass of air which it had traversed. Having established these preliminary facts, he then tried what the effect would be of receiving the image of the sun from different glasses at still greater distances; and a curious fact was observed, namely, that whatever

Burning Glasses.

Of Buffon.

Loss of light by reflection.

Burning
Glasses.

Round
form of all
distant
images.

shape the glass might be, whether square or triangular, or any other, the same was the figure of the reflection at short distances: but as the distance increased, the figure became rounded at the angles; as the distance increased, the rounding of the angles increased along with it, until at last the square or triangular figure was changed into one nearly circular, whatever was the original figure of the glass. This effect Buffon justly ascribed to the circumstance of the apparent magnitude of the sun, every portion of the glass reflecting in reality an image of the sun, and the whole reflection being composed of an infinite number of such images, each of which subtended an angle of half a degree. At small distances, therefore, the images are too small in proportion to the magnitude of the figure to affect the shape. As the distance increases, the magnitude of each of the images increasing along with it, while the figure and magnitude of the whole reflection remains in other respects the same, the former becomes at last equal to the latter, and the square or triangular figure is absorbed in that of the circular image of the sun, and every glass comes at last to give nearly the same figure. Hence it followed that the light could be no otherwise enfeebled by distance than as it was diffused by the increasing magnitude of the image. Putting all these circumstances together, Buffon had hopes of being able to burn in this manner at a great distance, by combining a sufficient number of glasses. Still he had doubts; for supposing we wish to burn at two hundred and forty feet distant, the focus or image of the sun at this distance could not be less than two feet. What a diffusion of light, compared with the degree of concentration in very ordinary glasses,—in the mirror of the Academy of Sciences, for instance, of which the diameter is three feet! This was a hundred times larger than the diameter of its focus, which was only one third of an inch; and hence he concluded, that to burn as powerfully at two hundred and forty feet, the diameter of the mirror would have required to be two hundred and sixteen feet, which was impossible. Still, however, he had a suspicion that the effect of a large focus might be greater than the mere effect of concentration, although this was contrary to the received opinion of Descartes and other opticians; and on appealing to actual experiment, he found his suspicions satisfactorily confirmed. On trying, for example, a small burning glass three inches diameter, and the focal distance six inches, and diameter one eighteenth of an inch, with a glass thirty-two inches diameter, and a focus of two thirds of an inch,—in the focus of the latter copper melted in less than a minute, while in that of the former the copper would scarcely be gently heated, according to the principle we have already explained. Encouraged by this experiment, Buffon proceeded to put his plan in execution, and constructed, with the aid of M. Passemant, a compound mirror, represented at fig. 6. This consisted at first of sixty-eight silvered glasses, each eight inches long and six broad, arranged in a square frame parallel to each other, and separated by spaces, about one fourth or one third of an inch. These allowed the glasses to move easily independent of one another, and also allowed the operator to see through and to direct the reflections to one point. In this manner the whole sixty-eight mirrors could be made to unite their force at twenty, thirty, or even a hundred and fifty feet; and by augmenting the size of the compound mirror by adding to the number of small mirrors, the effect might be increased to any extent. The only difficulty consists in moving such a number of glasses, and directing them all to the same object. Great attention must also be paid to the choice of the glasses, which are often very defective, though they may appear well enough at first sight. The sixty-eight above described had to be picked

Effect of
large focal
image.

Compound
mirror.

out of more than five hundred. They were tried by observing the reflection on a wall a hundred and fifty feet distant, and those only which gave distinct and well-defined images were taken.

The first experiment was made with the mirror on the 23d of March 1747, at mid-day. With forty glasses only, it set fire to a plank of tarred beech. Not being yet mounted, however, on its stand, it acted under a great disadvantage.

The same day, a plank done over with tar and brimstone was set fire to at a hundred and twenty-six feet with ninety-eight glasses, the mirror being still more disadvantageously placed.

On the 3d of April, at four o'clock in the afternoon, the mirror being mounted and placed on its stand, a slight inflammation was produced on a plank covered with shreds of wool at a hundred and thirty-eight feet distance, with a hundred and twelve glasses, although the sun was weak, and the light very pale. One requires to take care of himself in approaching the place where the combustible materials are placed, and avoid looking at the mirror; for if unfortunately the eyes are found in the focus, they would be struck blind by the brightness of the light.

On the 4th of April, at eleven in the morning, the sun being very pale, and covered with vapours and light clouds, the mirror was still capable of producing, with a hundred and fifty-four glasses, at a hundred and fifty feet distance, a heat so considerable, that in less than two minutes it made a tarred plank smoke, which would certainly have been inflamed if the sun had not disappeared all of a sudden. The next day at three P. M., with the sun still more feeble than the preceding, chips of fir coated with sulphur and mixed with charcoal were kindled in less than a minute and a half, with a hundred and fifty-four glasses, at the distance of a hundred and fifty feet. When the sun was brisk it only required a few seconds to produce inflammation.

On the 10th of April, after mid-day, with the sun pretty clear, a plank of tarred fir was kindled at a hundred and fifty feet with only a hundred and twenty-eight glasses; the inflammation was very sudden, and extended over the whole breadth of the focus of sixteen inches diameter. The same day at half-past two the light was directed on a plank of beech tarred in part and covered in some places with shreds of wool. The inflammation was very quickly produced; it commenced with those parts of the wood that were uncovered, and the fire was so violent that it was necessary to immerse the plank in water to extinguish it: there were a hundred and forty-eight glasses, and the distance was a hundred and fifty feet.

On the 11th of April, the focus being only twenty feet distant from the mirror, twelve glasses only were required to inflame little combustible matters. With twenty-one glasses a plank of beech which had been already partly inflamed was set fire to; with forty-five glasses a large flagon of tin, weighing about six pounds, was melted; and with a hundred and seventeen glasses thin pieces of silver were melted, and an iron plate made red hot; and "I am persuaded," says he, "that at fifty feet distant the metals might have been melted as well as at twenty, by employing all the glasses of the mirror; and as the focus at this distance is six or seven inches diameter, it affords a very convenient method of making experiments on the metals, which could not be done with ordinary mirrors, the foci of which are either of feeble power, or a hundred times smaller than that of mine. I remarked that the metals, and particularly silver, smoked much before melting; the smoke was so sensible as to cast a shade on the ground. This I particularly observed, for it was not possible to look at the metal in the focus, the light being much brighter than that of the sun."

Burning
Glasses.

Effect of
large focal
image.

Such are the results of Buffon's original experiments, and they are certainly very remarkable, and such as could not have been well anticipated from any previous knowledge of the subject. We have already seen that, according to Professor Leslie's experiments, the greatest heat of the sun in our latitude is 16° ; suppose that in France it may amount to 15° in the month of April. The heat required to inflame beech or fir coated with tar cannot be estimated at less than 600° or 800° , which would require a concentration of forty or fifty times; and seeing one half is lost by reflection, it would require eighty or one hundred mirrors; and yet we see at the distance of twenty feet beech was inflamed with only twenty-one mirrors, which we should not have calculated to produce a higher temperature than 157° . Silver, again, cannot be melted with less heat than 4500° , or a concentration of 300 times, and requiring, therefore, 600 mirrors; and yet the pieces of it were melted with 117 mirrors. The same effects were observed at greater distances, making allowance for the distance. At 66 feet tarred beech was inflamed with 40 glasses, at 126 feet with 98, and at 150 feet tarred fir was inflamed very suddenly with 128 glasses. It is not easy to determine the exact diminution of effect by distance, so much will depend on the glasses themselves. Were the reflected image to enlarge itself regularly in receding from the glass, and the light to be equally diffused over the image, the calculation would be simple; but this is not the case, seeing there are rays proceeding from every point of the glass parallel to one another, and the effect of which therefore does not decrease with distance. The rays are also more accumulated in the centre than at the extremities of the image. Still, however, a decided diminution must arise from the distance of the object from the mirror; and the above results, therefore, are still far beyond what could have been looked for from so small a number of glasses employed. The cause of these extraordinary effects of the mirrors it is not easy to explain; and the discrepancy does not seem to have occurred to Buffon, nor to any of the succeeding philosophers who have considered the subject. It is certainly, however, very palpable; and either the original estimate of 15° for the natural heat of the sun is too low, which, however, we have no reason to think from other considerations, as well as the acknowledged accuracy of the observer, and his perfect means of observation; or else, what is more probable, the heat accumulates in the heated body in a higher ratio than that of the amount continually flowing in and discharged. The level of a reservoir, as is well known, rises higher than in proportion to the quantity running in, and discharged by a given opening. It rises to a level increasing as the square of the flow; and something of this kind may perhaps occur with the stream of heat. The subject, however, would require a careful examination, and various new experiments made in a more accurate manner than has yet been done. It is much to be regretted that Buffon did not make use of a thermometer to measure the actual heat in the focus of the mirror. We have no doubt that a few observations with this instrument, or still better with Leslie's thermometric photometer, would lead to curious results.

Besides the above experiments, which were made on the first trials of the mirror, a great number of other experiments were afterwards made, which all confirmed the first. Wood was kindled at 200 feet, and even at 210 feet, with the summer's sun, every time the sky was clear; and with four such mirrors it might be done at 400 feet, and perhaps farther. All the metals also, and metallic minerals, were melted at twenty-five, thirty, and forty feet. It took about half an hour to mount the mirror, and to make all the images coincide in one point; but when it is

once adjusted it will serve at all times for any particular distance; but if the focus is to be changed, it will take half an hour to do this,—to change, for example, from 100 feet to 150 feet. The above experiments were made publicly in the Jardin du Roi.

The mirror represented in fig. 6 has 360 glasses. The frame is supported on the axis AB, round which it can be turned by means of the rack FG, and the pinion and handle HK. The axis rests on the two uprights AL BM, which are firmly fixed by mortises into the bottom piece OQ, and cross piece *ab*, and steadied by diagonals; the uprights and frame are movable round an upright pillar or axis, the feet being provided with rollers to cause the whole mirror to turn easily round. The upright pillar or axis is fixed in the centre of a broad square base, or sole of wood, which is capable of turning on rollers or castors, and the whole is moved in any direction. Each of the glasses is fixed on a square plate of metal ABCD, fig. 12, movable on an axis CD, which turns on a small frame, seen from behind in fig. 10, and in front in fig. 11: the screw FE pressing against the back of the plate, and the spring L resisting and pressing in the opposite direction, the plate is held firm in its position, and by turning the screw in or out the angle of the glass is altered. The whole frame and plate are besides movable round another axis CD, perpendicular to the former; this motion being regulated and directed by screws and springs in the same manner: and thus the glass having a universal motion, can easily be set so as to throw the reflection in any direction, and all the glasses by the same means directed towards one point or focus.

Such are the effects and construction of the celebrated mirror of Buffon, which actually set fire to wood at so considerable a distance; and proves, therefore, clearly the practicability, with such an apparatus, of setting fire to a vessel at the same distance. That it proves, however, the actual fact related of Archimedes, seems to admit of considerable doubts. A distinguished philosopher in the end of the eighteenth century, with all the advantages of the amazing progress of science and the arts up to that period, has, after a laborious research and numerous experiments with all the leisure of philosophical inquiry, at last succeeded in constructing a combination of mirrors, which inflames combustible materials at a distance, and in a convenient situation. But when we consider the low state of the arts in the time of the Syracusan philosopher, the inferior reflecting power of any mirror then in use, the difficulty and expense of procuring such a number as would be necessary, and of combining them together so as to act with facility and effect on an enemy's fleet,—seeing that even in Buffon's apparatus it took half an hour to bring the mirrors to a focus; and, therefore, in the case of a vessel in motion, it would be next to impossible to follow it, and keep all the glasses steadily directed to one point,—if we consider all these circumstances, the difficulties of the undertaking must appear so enormously increased, that it seems to be no disparagement to the genius even of Archimedes to require stronger proof than has yet been adduced to convince us of the fact; and particularly, as Polybius, Livy, and Plutarch, who have described the prodigies of his mechanical skill, are silent in regard to this, which would have been as wonderful as any, and was calculated to excite fully greater astonishment. That Archimedes had conceived such an idea, and perhaps in part reduced it to practice, appears certain from so many concurring testimonies; but that he actually reduced the Roman fleet to ashes, is probably only one of those exaggerations to which every action, in any degree marvellous, naturally gives rise.

Since the time of Buffon scarcely any thing further has

Effects of
Archimedes' mirror still
doubtful.

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Glasses.
Peyrard's
mirrors.

been done on the subject of these compound burning mirrors; and as the subject is one more of curiosity than of real utility, for, as to its application as an engine of war, it is now out of the question, enough has perhaps been done. In Peyrard's edition of the works of Archimedes, however, there is a memoir on the subject by the translator, who seems to have bestowed a good deal of attention on the subject, and suggested various ingenious improvements on the mode of combining the mirrors, and directing them with facility to any object even though in motion; but he does not seem actually to have constructed any on this plan. To direct and change so many mirrors quickly would require evidently several operators at the same time, as each mirror must be set separately. But it is extremely difficult in the ordinary way for different hands to act in concert, because if any one of the glasses, for instance, were out of the focus, it would be impossible to tell which it was, and each operator would be moving his own, and thus deranging the whole. Peyrard, therefore, proposes to furnish each mirror with a telescope, adjustable in such a manner that, being turned to any object, the reflected rays from the mirror should fall in the same direction. The adjusting apparatus consists of a telescope attached parallel to the sides of the mirror, and also capable of turning on its axis and carrying the mirror round with it. The mirror is besides capable of turning on an axis of its own, perpendicular to that of the telescope, and by this double motion the adjustment is effected. The mirror is first turned on the axis of the telescope until its own particular axis becomes perpendicular to the plane of the incident and reflected rays; and this is done by observing when the shadow of the edge of the frame of the mirror falls on a particular point, marked on an index projecting from the telescope. The mirror is then turned on its own axis until the angle of incidence becomes equal to the angle formed by the mirror and telescope; and this is known by a shadow made through an opening in the silver of the mirror falling on a particular spot in the index. In this manner one operator can adjust all the mirrors intrusted to him with accuracy and facility, and without knowing at all what the others are doing. The apparatus is represented at fig. 7, and the following is Peyrard's description.

Where AB is a common telescope with only one tube, containing the object-glass at B, and the eye-glass at A. The tube is movable on its axis between the two collars CC, C'C', which are fixed to a piece of metal, DD. This piece of metal is supported on a stand like a common telescope, having a vertical and horizontal motion, by which the axis of the telescope may be directed with facility to any given point. The axis of the instrument is marked out by the intersection of a pair of cross wires placed in the anterior focus of the eye-glass; and when this point of intersection is directed to any object, the whole instrument is kept steady in its place by the screws F and G, the former of which prevents any motion in a vertical direction, and the latter in a horizontal direction. From the middle of the tube AB rises a cylindrical piece of metal MM, and upon the eye-glass extremity a branch of iron HHH, wrought square, is fixed firmly in a direction parallel to the axis of the cylindrical piece MM.

A plane silvered glass mirror IL, inserted into a proper frame, is made to turn on two pivots, one of which, *mm*, rests on the cylinder MM, while the other, *oo*, is inserted in the horizontal part of the branch HH. The straight line which passes through the centre of these pivots must be exactly parallel to the silvered back of the mirror, and at right angles to the axis of the telescope, and the black mark N, produced by a scratch upon the silvered surface, must be bisected by the axis of the mirror.

Above the object end B of the tube is fixed a plate of metal, seen in the figure; and behind this plate is seen another square plate, *zz*, on which are shown the lines *xx*, *yy*, crossing each other at right angles. By means of a piece of brass fixed to the last of these plates, and traversing a square hole made in the other plate, the square plate may be moved up and down, and from right to left; and it is kept in any position which is thus given to it, by a screw on the back of the fixed plate. The movable square plate must be adjusted in such a manner that the line *xx* may intersect the axis of the telescope, and be parallel to the axis *om* of the mirror. The position of the line *yy* must also be such that its distance from the axis of the telescope is equal to the distance of the line IK from the same axis. When the plate *zz* is thus adjusted, the straight line *yy* will always be in the same plane with the line IK, whatever may be the position of the mirror; and a line drawn from a point at N, where the axis of the mirror cuts IK, to the point where *yy* intersects *xx*, will be parallel to the axis of the telescope.

The spring QQ is fixed at Q to the arm HH, and by a screw R working into its other extremity Q' the end H of the horizontal arm may be made to press the pivot *oo* upon the frame of the mirror. The horizontal branch HH, which is represented separately in fig. 10, is surrounded with several pieces. The piece *db* and pivot *o* are fixed in an invariable manner. The pivot *oo* is inserted in a square hole through the piece VV, and through the extremity of the arm HH. The piece *db* may be moved either before or behind by turning the screw; and the piece VV may be moved from right to left with the piece *db* by means of the screw S.

The apparatus being thus constructed, the next thing to be considered is the method of adjusting it. In order to effect this, the axis of the mirror must be perpendicular to the axis of the telescope; the line drawn from a point near N, where the axis of the mirror cuts the line IK, to the point of intersection of *xx* and *yy*, must be parallel to IK, and the straight line *yy* must always be in the same plane with IK.

The mirror is first placed in such a manner that the line IK is at right angles to the axis of the telescope. By turning the screw I, the lower edge of the frame is made a tangent to the circular surface MM, which is parallel to the axis of the telescope. The screw I is then turned in order to fix the piece *db* in an invariable manner.

The axis of the telescope is next directed to a point on a plane surface placed at a certain distance. This point must be situated in a vertical plane, perpendicular to the plane surface, and passing through the eye of the observer and the centre of the sun. A horizontal line being drawn through this point, a second point is taken, as far from the first as the centre of the mirror is distant from the axis of the object-glass. By unscrewing S, turning the telescope on its axis, and the mirror also about its own axis, the piece VV is moved backwards or forwards until the centre of the reflected image falls upon the second point. The square plate *zz* is then adjusted in such a manner that the shadow of the line IK falls on the line *yy*, and that the shadow of NN is bisected by the line *xx*. When this happens, the plate *zz* is firmly fixed. Hence it follows that whenever this adjustment is made, and when the intersection of the cross wires of the telescope is directed to any point, the rays reflected by the mirror will be parallel to the axis of the telescope, and will always continue so while the shadow of IK falls on *yy*, and while the shadow of NN is bisected by *xx*.

In making use of the mirror, the intersection of the cross wires must be first directed to any point of the ob-

Burning Glasses.

ject which is to be inflamed. The telescope must next be turned round in the collars CC, C'C', till the shadow of the line IK falls upon yy ; and finally, the mirror must be turned about its own axis till the shadow of NN is bisected by the line xx . The centre of the reflected image will consequently fall upon a point of the object as far distant from the point to which the intersection of the wires was directed, as the centre of the mirror is from the axis of the telescope. The image may obviously be preserved in this position as long as we choose, by keeping the shadow of IK and N in the same position.

Calculation of Peyrard.

The above apparatus is certainly well contrived for effecting its object, but seems at the same time rather complex and expensive for any purpose to which such a mirror might be required. In regard to the power of such a combination of mirrors, M. Peyrard has only made some calculations founded on the observations of Buffon. In the first place, in regard to the effect of the distance of the mirrors from the object, he calculates that, with one about eighteen inches diameter, the rays are so diffused as to reduce the heating effect to one half at 66 feet; to one third at 118 feet; to one fourth at 161 feet; to one fifth at 200 feet; and to one tenth at 348 feet. The next question is to determine, at the shortest distance from the glass, how many times the sun's heat must be multiplied by the glasses to produce inflammation, or boiling or fusing of metals, or any other similar effects, in order to calculate how many glasses would be sufficient for the purpose, such reflection being, as Buffon found, one half of the sun's heat. This question is solved by Peyrard, from the observations of Buffon already stated, allowing for the distances by the above rule, and reducing them all to the shortest, or when the object is placed as close as possible to the glasses. Hence he finds, that on the 23d March, calculating for the number of glasses and the distance, four times the heat of the sun would set fire to a plank of tarred beech, and $4\frac{1}{2}$ times to a plank coated with tar and sulphur; 2dly, that on the 10th of April a plank of tarred fir was set fire to by $4\frac{4}{5}$ times the sun's heat; 3dly, on the 11th of April a plank of beech which had been already on fire was inflamed by $5\frac{1}{4}$ times the sun's heat. The same day small combustible materials were inflamed with three times the sun's heat, and also a block of tin weighing six pounds was melted by $11\frac{1}{4}$ times the sun's heat; also thin pieces of silver were melted, and a plate of iron made red hot, by $29\frac{1}{4}$ times the sun's heat; and Peyrard on the whole draws the conclusion, in the view of setting fire to a fleet of ships, that five times the heat of the sun would be sufficient to inflame tarred planks, and eight times this heat would be sufficient to inflame all sorts of wood, and less in general would do it. Hence he deduced, in regard to distance, that sixteen of these glasses would be sufficient to inflame wood at the distance of 66 feet; twenty-four at 118 feet; thirty-two at 161 feet; forty at 200; eighty at 348; and at 3750, or nearly three quarters of a mile, it would require 590.

In regard to these calculations, and particularly that of the effect of the sun's heat, it appears so much beyond what might naturally be looked for, that its accuracy may well be questioned; and it is surprising this should have escaped the notice of the author, and of succeeding writers, who have copied without comment all these results. If four times the sun's heat be sufficient to inflame wood, then eight glasses would do it at a small distance, which is hardly credible. At any rate, if it be so, it implies an accumulation of heat which is quite unaccountable on any of the usual principles on which this fluid acts. In fact, we have already seen, from the observations of the photometer, that the greatest effect of the sun's heat in our latitude does not exceed sixteen degrees. Supposing this the amount

of it in France in the month of April, four times this would only be sixty-four degrees, while the heat of inflammation cannot be less than 800°, twelve times what Peyrard supposes. Again, thirty times the sun's heat would only amount to 480°; and yet he says that silver was melted with this heat, which requires a temperature of 4500°, nearly ten times as much. We have already stated and explained how much the effects of Buffon's mirrors exceed what might reasonably be expected from their concentrative power. But these calculations carry them still farther. The difference seems to arise from the principle on which Peyrard has calculated the effect of distance. He supposes it to diminish as the square of the distance from a point situated so far behind the mirror, that the latter subtends at that point the same angle with the sun, as at fig. 9, where AB is the diameter of the glass, AG and BG two lines, one from each extremity of the glass, and forming together an angle, AGB, of 32'. These lines being prolonged, indicate the boundary of the extreme rays reflected from the glass; and the sections ML ON RS of the cone diminish as the square of GD GP and G. In this view it would be the same as if all the light proceeded from the point G, so that all the rays would diverge from it. This, however, is far from being the case, as all the rays which fall on the glass from any given point of the sun are reflected in lines sensibly parallel, which do not diverge from that or any other point, and cannot therefore suffer diminution from distance. This calculation, therefore, would require considerable modification; and the whole subject would require, as already stated, to be re-examined experimentally.

Such are the compound mirrors which have been made Single re- on the principle of that of Archimedes. In regard to single flectors. concave mirrors, a great many of these have been constructed at different periods, remarkable for their powerful effects. We shall just describe some of the principal ones. M. Vilette's Vilette, a French artist at Lyons, constructed no fewer burning than five mirrors of this kind, of considerable magnitude, mirrors. One of them was bought by M. d'Alibert for 1500 livres; another was purchased by Tavernier, and presented to the king of Persia; a third was sent by the French king to the Royal Academy; a fourth was bought by the king of Denmark; and the fifth was brought to England for public exhibition. The first of these mirrors was thirty inches in diameter, and weighed above a hundredweight. Its focal length was about three feet, and the size of the sun's image was about half a louis d'or. It was mounted on a circular frame of steel, and could easily be put into any required position. This mirror was made in 1670, and having been brought to St Germain's by order of the king, his majesty was so well pleased with it, that he rewarded Vilette with a hundred pistoles for the sight of it, and afterwards purchased it and placed it in the Royal Observatory of Paris. The effects were the following:

	Seconds.
A small piece of pot iron was melted in.....	40
A silver piece of fifteen pence was pierced in.....	24
A thick nail (<i>le clou de paysan</i>) melted in.....	30
The end of a sword blade of Olinde burnt in.....	43
A brass counter was pierced in.....	6
A piece of red copper was melted in.....	42
A piece of chamber quarystone was vitrified in.....	45
Watch-spring steel melted in.....	9
A mineral stone, such as is used in harquebusses	
<i>d'rouet</i> , was calcined and vitrified in.....	1
A piece of mortar was vitrified in.....	52
Green wood and other bodies took fire instantly.	

The mirror of M. Vilette which was brought to England was put into the hands of Dr Harris and Dr Desaguliers, who made several trials with it. It was a composi-

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tion of copper, tin, and tin glass; and its reflection had something of a yellow cast. There were only a few small flaws in the concave surface, but there were some holes in the convex side, which was polished. The diameter of the mirror was 47 inches, its radius of curvature 76 inches, and its focal length 38 inches. The following results were obtained in June 1718, between nine and twelve o'clock in the morning, and the time was measured by a half-second pendulum.

	Seconds.
A red piece of Roman patera began to melt in.....	3
and was ready to drop in.....	100
A black piece of the same melted in.....	4
and was ready to drop in.....	64
Chalk taken out of an echinus spatagus filled with chalk only fled away in.....	23
A fossil shell calcined in.....	7
and did no more in.....	64
The black part of a piece of Pompey's pillar melted in and the white part in.....	50
Copper ore, with no metal visible, vitrified in.....	8
Slag or cinder of the iron work said to have been wrought by the Saxons was ready to run in.....	29½
The mirror now became hot, and burned with much less force.	

	Seconds.
Iron ore fled at first, but melted in.....	24
Talc began to calcine at.....	40
and held in the focus.....	64
Calculus humanus was calcined in.....	2
and only dropped off in.....	60
The tooth of an anonymous fish melted in.....	32½
The asbestos seemed condensed a little in.....	28
But it now became cloudy. M. Vilette says that the mirror usually calcines asbestos.	
A golden marchsite broke, and began to melt in.....	30
A silver sixpence melted in.....	7½
A King William's copper halfpenny melted in.....	20
and ran with a hole in it.....	31
A King George's halfpenny melted in.....	16
and ran in.....	34
Tin melted in.....	3
Cast iron melted in.....	16
Slate melted in.....	3
and had a hole in.....	6
Thin tile melted in.....	4
and had a hole and was vitrified through in.....	80
Bone calcined in.....	4
and vitrified in.....	33
An emerald was melted into a substance like Turquoise stone, and a diamond that weighed 4 grains lost ⅔ths of its weight.	

This mirror was made by M. Vilette some years after the first, and with the assistance of his two sons. It came into the possession of M. Vilette the son, engineer and optician to his electoral highness of Cologne, bishop and prince of Liege, where he commonly resides. At the desire of several learned men, M. Vilette brought it to London, where its effects were exhibited in Priory Garden, Whitehall.

Maginus
and Manfredi.

Large burning mirrors were made by Maginus, and by Manfredi, canon of Milan, one twenty inches diameter, and the other three and a half feet; but, from the accounts of them in the *Philosophical Transactions*, they appear to have had but a feeble power compared with those of Vilette.

Garouste's
mirror.

In the year 1685 M. de la Garouste presented to the Academy of Sciences a large metallic mirror, five feet two inches in diameter, and five feet in focal length. It was not equally polished, and a piece was inserted in the middle of it where the metal had failed. This circum-

stance, however, did not seem to diminish its force. Several trials were made with this mirror in the academy, by order of M. de Louvois, but the precise effects which it produced have not been detailed. It is merely stated that those who tried it were satisfied with the results, and that its effects would have been much greater had it been better polished, and mounted upon a proper stand.

On the 27th of February 1667-8, Francis Smethwick, Esq. produced before the Royal Society two burning concave glasses, ground of a *newly invented figure*, which was probably that of a parabola. One of them was six inches diameter, with three inches of focal length; and the other was of the same diameter, with its focus ten inches distant. When these were brought towards a large lighted candle, they somewhat warmed the faces of those that were four or five feet distant; and when held to the fire, they burnt gloves and garments at the distance of about three feet from the fire. At another experiment made in the presence of Dr Seth Ward, the deeper of the two burned a piece of wood into flame in the space of ten seconds, and the shallower one in five seconds. This experiment was made in autumn, at nine o'clock in the morning, when the weather was gloomy. By exposing the deeper concave to a northern window on which the sun did not shine, it was found to warm the hand by "collecting the warmed air in the day time, which it would not do after sunset."

This last effect is extremely remarkable; it must have arisen from the mirror collecting the radiations of heat from the distant atmosphere warmed by the heat of the day. The existence of these radiations was then perfectly unknown, and not suspected, indeed, until they were discovered only a few years ago by Professor Leslie, and actually measured by the ethroscope.

The burning mirror to which we have already alluded, made by the celebrated Tschirnhausen, was formed of thin copperplate, about one sixteenth of an inch thick. According to one account it was about three Leipsic ells, equal to five feet diameter, and burnt at the distance of three feet and a half. According to another its diameter was four feet and a half, and its focal distance twelve feet.

The following are its effects:—

1. A piece of wood held in the focus flames in a moment, so that a fresh wind can hardly put it out.
2. Water applied in an earthen vessel immediately boils; and the vessel being kept there some time, the water evaporates all away.
3. A piece of tin or lead three inches thick melts away in drops as soon as it is put in the focus; and when held there a little time is in a *perfect fluor*, so that in two or three minutes it is quite pierced through.
4. A plate of iron or steel becomes immediately red hot, and soon after a hole is burnt through it.
5. Copper, silver, &c. melt in five or six minutes.
6. Stones, brick, &c. soon become red hot.
7. Slate becomes red hot, but in a few minutes turns into a fine sort of black glass.
8. Tiles which had been exposed to the most intense heat of fire melt down into a yellow glass.
9. Pot-shreds that had been much used in the fire melt into a blackish yellow glass.
10. Pumice stone melts into a white transparent glass.
11. A piece of a very strong crucible melted into a glass in eight minutes.
12. Bones were converted into a kind of opaque glass, and a clod of earth into a yellow or greenish glass.
13. The beams of the full moon when at her greatest altitude were concentrated by this speculum; but no perceptible degree of heat was experienced.

A plan for constructing burning mirrors of wood gilded

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Glasses.

over was proposed by Zacharias Quabenus, in his work *In Neruo Optico*. They were joined in twenty, or even a hundred concave pieces, on a turned wooden dish or scuttle, and the surface coated with pitch and gilded.

It is possible to construct mirrors of still more slender materials; and Zahnus, in his work *In Oculo Artificio*, fundam. 3, states, that an engineer of Vienna of the name of Neuman formed burning mirrors of pasteboard, covered in the inside with straw glued to it; and that they were capable of melting metals almost instantly. It is evident from what we have stated, that mirrors of this kind, from the great surface exposed, and the concentration in a perfect form not being absolutely necessary, may produce very powerful effects.

Parabolic mirrors of a large size and very considerable power were constructed by M. Hoesen of Dresden, and afterwards by M. Ehrard. These mirrors were composed of several pieces of solid wood, and on the convex part were pieces of wood, both diverging from the vertex and transversely, nicely fitted and strengthened. The concave part of this framing was covered with copperplate one eighth of an inch in thickness, four and a half feet long, and two and a half feet broad, so as to resemble one piece finely polished. The speculum was so supported as to be easily managed, and the anterior part of it was subtended by an iron arch half an inch thick. The middle of this arch, which coincided with the place of the burning focus, was perforated into a ring, which supported from both sides an iron fork for receiving the body to be examined. Four of M. Ehrard's mirrors constructed in this way had the following dimensions:—

No.	Perimeter.		Diameter or Ordinate		Depth or Absciss.		Focal Length.	
	Feet.	Inches.	Feet.	Inches.	Feet.	Inches.	Feet.	Inches.
1	29	4	9	7	1	4	4	0
2	21	0	6	8	0	10½	3	1
3	16	4	5	1	0	10½	1	10
4	13	2½	4	2	0	7	1	9

The celebrated Wolfius, who had witnessed the effects of these mirrors, states that in burning, calcining, melting, and vitrifying, they far exceeded any thing of the kind ever known. The hardest stones scarcely resisted a few seconds. Metals were rapidly perforated, and vegetables and bones were immediately burnt to a cinder and vitrified.

Our celebrated countryman Dr James Gregory turned his attention to the construction of burning machines about the year 1670; and in a letter to Mr Collins, dated St Andrews, 7th March 1673, he states his views on this subject, and requests Mr Collins to communicate them to Sir Isaac Newton, who returns a favourable opinion of the invention in a letter to Mr Collins. The passages in these letters are too interesting to be given in any other form than in the original words of these distinguished authors.

"Mr Newton's discourse of reflection," says Dr Gregory, "puts me in mind of a notion I had of burning glasses several years ago, which appears to me more useful than subtle. If ther be a concave speculum of glasse, the leaded convex surface having the same center with the concave, or to speak preciselie, albeit perchance to little more purpose, let the radius of the convexitie be c , the thickness of the glasse in *axis transitu* f , the radius of

the convexitie equal to $\frac{9c^2 + 18cf + 5f^2}{9c + f}$, this speculum

shall have the *foci* of both the surfaces in the same point; and not onlie that, but all the rays which are reflected betwixt the two surfaces, shall, in their egress, come, *quam proximé*, to the common focus. The making of such an speculum requireth not much more airt than an ordinar plane glasse, seing great subtiltie is not necessar here; so that I believe they who mak the plane miroir glasses, wold mak one of these, three foot in diameter, for four or five pounds sterling, or little more: for I have seen plane glasses, almost of that bignes, sold even here for less money. Now seing (as Mr Newton observeth) that al reflecting metallis lose more than one third of the rayes; this concave glasse, even *ceteris paribus*, wold have an great advantage of a metall one; for certainlie an exactlie polished thin miroir glasse, of good transparent mater, after a few reflections, doeth not lose one fourth of the rayes; and, upon other accounts, this hath incomparable advantages, seeing it is more portable, free from tarnishing, and, above al, hardlie $\frac{1}{20}$ th of the value. The great usefulness of burning concaves, this being so obvious, and as yet (for quhat I kno) untouched by anie, makes me jealous that there may be in the practice some fallacie. Ye may communicate this to intelligent persons, and especiallie to Mr Newton; assuring him that none hath a greater veneration for him, admiring more his great and subtle inventions, than his and yours.

"P. S. If ye please, let me hear, with the first convenience, what may be judged the result of this burning concave; for I am as much concerned to be undeceived, if ther be any insuperable difficultie, as to be informed of an most surprising success. I have spoke of it to severals here, but al were as ignorant of it as my self," &c.

Sir Isaac Newton's reply to Mr Collins is dated Cambridge, April 9th, 1673, and contains the following passage:—

"The design of the burning speculum appears to me very plausible, and worthy of being put in practice. What artists may think of it I know not; but the greatest difficulty in the practice that occurs to me, is to proportion the two surfaces so that the force of both may be in the same point according to the theory. But perhaps it is not necessary to be so curious; for it seems to me that the effect would scarce be sensibly less, if both sides should be ground to the concave and gage of the same tool," &c. &c.

The attention of Sir Isaac Newton being thus accidentally directed to the subject of burning instruments, he procured seven concave glass mirrors, each of which was eleven and a half inches in diameter, and six of these were placed round the seventh, and contiguous, but so as to have one common focus. The general focal length was twenty-two inches and a half, and about an inch in diameter. It melted gold in about half a minute, and vitrified brick or tile in one second. The effect of these speculæ was obviously much less than seven times the effect of any one of them. The rays of the sun could fall perpendicularly only on the one in the middle; and, in consequence of this obliquity of incidence, none of the speculæ intercepted a column of rays of the same diameter, and the image formed in the focus of each could not be exactly circular.¹

Burning mirrors composed of glass were constructed by Zeiher's mirrors.

¹ No account of this burning glass of Sir Isaac Newton's is given in the *Philosophical Transactions*; and we are informed, upon very good authority, that no such instrument is in the possession of the Royal Society. Mr Derham, however, a fellow of the Royal Society, gives the same account which we have followed in the text. (See Derham's *Astrothologia*, lib. vii. cap. i. note.)

Burning
Glasses.

M. Zeiher of St Petersburg. His object was to convert plates of plain glass into concave mirrors, which he effected by placing the glass upon a convex tool, and exposing it to a strong heat, till it assumed the exact curvature of the tool. Zeiher made numerous trials with plates of various sizes, and, after several failures, he succeeded in finding the proper method of conducting the operation. No particular difficulties occurred in giving the proper shape to plates five or six inches in diameter; but, in forming one of sixteen inches, the circumference was moulded to the tool before the central parts, where a number of vesicles of air had collected; and, in some other cases, the glasses cracked after they had received the proper shape. The following method is that which Zeiher always found to succeed:—

A small bit of the glass to be used must first be exposed to the fire till it becomes red hot, and if, after cooling, it has preserved its polish and transparency, the glass is fit for the required purpose; for it sometimes happens that the glass becomes quite black after the operation. The plate of glass is next placed on a concave iron dish of the required curvature, and put into a furnace. Coals are placed below and above the dish, and on all sides of it. The greatest care must then be taken that the glass shall become equally hot both at the circumference and at the centre; for if the red colour should get deeper in the middle, the glass will be in great danger. As soon as the whole is red hot, the instant of its bending to the shape of the mould must be carefully watched; and when this happens, which may be observed from the reflected images of the surrounding coals, all the fire must be removed from above the glass, and also a great part of the fire at its sides. The glass must then be covered with warm ashes, that have been passed through a sieve, and it must be allowed to cool gradually. It is of the utmost importance to mark the precise moment when the glass applies itself to the surface of the mould; for, if it remain too long, a part of the scoriæ which separates from the mould will adhere to the glass. When the glass is covered with the hot ashes the fire must still be allowed to remain below the mould, lest the glass should crack by being cooled too suddenly. When the glass is taken from the furnace, its convex sides may then be silvered for a burning speculum; or, if a lens is required, two of the pieces of glass may be joined, so as to contain a fluid.

M. Zeiher also constructed burning glasses by making a concave frame of wood, and covering the concave surface with a paste made of flour, chalk, &c. till it had the requisite degree of curvature. A number of pieces of silvered glass mirrors, about half an inch square, were then fixed upon the concave side, so as to constitute a polygonal reflecting surface.

Buffon's
mirrors of
bended
plates.

Buffon also, besides the experiments already related, made a good many on the bending of flat plates into a curve. He took circular plates of glass about eighteen inches, two feet, and three feet, in diameter, and having perforated them at the centre with an aperture two or three lines in diameter, he placed them in a circle of iron that was truly turned. A very fine screw, connected with

a box stretching across the back of the glass, passed through the hole in the centre into a nut on the other side, so that by turning the screw the circular piece of flat glass was gradually incurvated till it formed a concave mirror. The glass of three feet diameter, when it was bent about five eighths of a line, had its focus fifty feet distant, and set fire to light substances; when it was bent two lines, it burned at the distance of forty feet; when it was bent two and three-fourth lines, its focal length was thirty feet; but in attempting to reduce its focal length to twenty feet, it was broken in pieces. The glass of two feet diameter shared the same fate; but the one of eighteen inches, which had a focal length of twenty-five feet, was preserved as a model of this species of mirror. The accident which happened to the two largest of these mirrors appears to have been owing to the perforation in the centre. In order to remedy this evil, Buffon proposed to place a circular piece of glass at the extremity of a cylindrical drum, made of iron or copper, and completely air tight. The cavity being exhausted by means of an air-pump, the glass at one extremity would be pressed in by the weight of the atmosphere, and would have its focal length inversely proportional to the degree of refraction. This contrivance is represented in fig. 1, Plate CXLII., and also a section of it.

A still more simple and ingenious method of exhausting the air in the drum was contrived by Buffon. He proposed to grind the central part of the plain glass into the form of a small convex glass, and in the focus of this convex portion to place a sulphur match, so that when the mirror was directed to the sun, the rays concentrated by the convex portion would inflame the match, which, being set on fire, would absorb the air, and thus produce a partial vacuum, and consequently an incurvation of the plain glass.¹ See fig. 2.

Mirrors of this kind, with a movable focus, were regarded by Buffon as of great use for measuring the effects of the solar rays, when concentrated into foci of different sizes. As the quantity of incident light and heat is nearly the same to whatever curvature the glass is successively bent, we might thus determine the size of focus by which a maximum effect was produced.

Buffon likewise made a number of concave mirrors by bending plates of glass on moulds of a spherical form. Some of these were as large as three, four, four feet six, and four feet eight inches, in diameter; but the utmost care is requisite in the formation of those of such a large diameter. After these glasses were moulded to the proper shape in appropriate furnaces, their concave and convex sides were carefully ground so as to be perfectly concentric, and the convex side was afterwards silvered by M. de Bernieres. Out of twenty-four mirrors of this kind which Buffon had moulded, he was able to preserve only three, the rest having broken, either by exposure to the air, or in the operation of grinding. One of these three, which was forty-six inches in diameter, was presented to the king of France, and was regarded as the most powerful burning mirror in Europe. The other two were thirty-seven inches in diameter, and one of them was deposited in the Cabinet of Natural History in the Jardin du

¹ Instead of grinding the central part of the glass plate into a convex form, Zeiher proposes that a small burning glass should be applied to inflame the sulphur; or, what is still better than either of these plans, a convex lens might be fastened, by the balsam of Tolu, or any transparent cement, to the centre of the glass plate.

M. Zeiher employed a more effectual method of bending circular plates of glass than that which was used by Buffon. The circular piece of glass was placed in an iron ring, across which was fixed a thin piece of iron, with a hole containing a female screw, so placed as to be above the centre of the glass. A strong bar of brass was also placed across the centre of the speculum; and a screw working in the centre of this, and in the female screw already mentioned, pressed the thin iron bar against the glass, and bent it into the proper curvature. A plate of Venetian glass, two lines thick and twenty Rhinland inches in diameter, was bent in this way till it protruded two lines in the middle, so as to have a focal length of fifteen feet, which was a greater curvature in proportion than any of Buffon's. The glass was kept in this state for several days without suffering any injury. (See *Nov. Comment. Petrop.* 1758, 1759, p. 250, note.)

Burning
Glasses.

Burning Glasses.
 Buffon's
 Tschirnhausen's
 lens.

Burning Glasses.

Roi. Buffon concentrated the rays of the moon by means of the mirror of forty-six inches diameter; but, though his thermometer was very sensible, no heat was perceived.

In regard to burning lenses, the first of any magnitude were constructed by M. Tschirnhausen. These were compound glasses; the light, after passing through one large glass, being still farther concentrated by a second smaller one. The large glasses were three and four feet in diameter, their focal length was about twelve feet, and the focal image about one and a half inch diameter. The focal image of the smaller glass did not exceed eight lines. The large lens, which weighed 160 pounds, was purchased by the Duke of Orleans, and presented by him to the French Academy. The following are the remarkable effects produced by it:—

1. All sorts of wood, whether hard or green, and even when wet, were burnt in an instant.
2. Water in a small vessel boiled immediately.
3. All the metals, when the pieces were of a proper size, were easily melted.
4. Tiles, slates, delft ware, pumice stone, talc, whatever was their size, grew red and vitrified.
5. Sulphur, pitch, and resins, melted under water.
6. When the metals were placed in charcoal, they melted more readily, and were completely dissipated.
7. The ashes of wood, vegetables, paper, and cloth, were converted into a transparent glass.
8. All the metals were vitrified upon a plate of porcelain. Gold received a fine purple colour.
9. Substances that would not melt in pieces were easily melted in powder; and those that resisted the heat in this form melted by adding a little salt.
10. A substance easily fused assists in melting more refractory substances when placed along with them in the focus; and it is very singular, that two substances which are very difficult to melt separately, are very easily melted when exposed together, such as flint and English chalk.
11. A piece of melted copper being thrown suddenly into cold water, produced such a violent concussion that the strongest earthen vessels were broken to pieces, and the copper was thrown off in such small particles that not a grain of it could be found. This did not happen with any other metal.
12. All bodies except the metals lose their colour. The precious stones are instantly deprived of it.
13. Certain bodies vitrify easily, and become as transparent as crystal; but by cooling they grow as white as milk, and lose all their transparency.
14. Other bodies that are opaque when melted become beautifully transparent when they are cooled.
15. Substances that are transparent both when melted and cold become opaque some days after.
16. Substances which the heat renders at first transparent, but which afterwards become opaque by being melted with other substances that are always opaque, produce a beautiful glass, always transparent.
17. The rays of the moon concentrated by this lens, though extremely brilliant, have no heat.

M. de Buffon, whose ingenuity and research extended themselves into every branch of this subject, constructed various burning lenses of different kinds. His first object was to form burning glasses, by combining two circular segments of a glass sphere so as to form a lenticular cavity to be filled with water. These glass segments were first moulded into their proper shape, and then regularly ground on both sides, so that the concave and convex surfaces were exactly parallel. The one which he constructed was thirty-seven inches in diameter, with a focal length of about five feet and a half; and the segments were of considerable thickness, to prevent them from

breaking or altering their form by the weight of the included water. This lens is represented at fig. 3. As the refractive power of water is very small, Buffon proposed to increase it by saturating it with salt; but notwithstanding every precaution, he found that the focus of lenses of this kind was never well terminated, nor reduced to its smallest size, and that the different refractions which the rays sustained produced a very great degree of aberration. Buffon also proposed to make each segment consist of a number of smaller segments put together into a frame; but as the water could not easily be prevented from insinuating itself between the joints of the segments, and as there would be a great difficulty in arranging them in the same spherical circumference, this kind of burning glass does not seem to have ever been executed.

Having made some experiments on the loss of light in passing through thick glasses, Buffon found it very considerable, so that it detracted greatly from the power of large burning glasses, which must of necessity be proportionally thick in the centre. Bouguer had formerly estimated the loss of light in passing through glass one twelfth of an inch, at two sevenths of the whole. But the glass used by him must have been extremely imperfect; for Buffon found, with glass from St Gobin, the loss of light in passing through one twelfth of an inch, one seventh of the whole, or only half the amount of Bouguer's estimate. Through glass one third of an inch thick, the loss was about two thirds. Hence in very large lenses the central portions must become nearly quite inefficient, from the quantity of light obstructed by them. On considering this subject, Buffon conceived a very ingenious plan for obviating the effect, and which has since become of great importance, from the extensive application of it in France in the construction of the large lenses now used there with such advantage in the light-houses, in place of reflectors. It consisted in forming the lens, not of one mass, but of several detached pieces united together into one. The central portion was a lens of much smaller diameter than the one intended to be formed, not one third perhaps, but having the same focal distance, and being therefore much thinner than the central portion of a whole lens would be; round this a second portion is set, forming a complete zone, and filling up another third of the diameter of the glass; lastly, another similar zone round the second, forming the exterior portion of the lens. Each of these zones forms a portion of a lens of the same focal distance as the central one, only much thinner; and then we obtain a very large lens, and yet extremely thin in proportion, so as to pass a much larger quantity of light than the others. Fig. 4 is a view of one of this sort of lenses, and fig. 5 sections of several lenses, which will render it quite intelligible. This species of glass Buffon considers as the most perfect of the kind; and when it is made three feet diameter, and an inch and a fourth thick at the centre, and six feet focus, he thinks it will give a degree of heat four times greater than that of the most powerful lenses yet known. "I venture to predict," he says, "that this glass in pieces, which I have thought of for twenty years, will be one of the most useful instruments of physics." Instead of having each zone in one entire piece, it is obvious that, without altering the effect, the zones, as proposed by Dr Brewster, may be composed of two or more pieces, which facilitates the perfect execution; and this is the mode in which they are now constructed in France, constituting one of the most important improvements hitherto made in light-houses. Besides their thinness, these glasses possess other advantages. The pieces which compose the compound ones can be easily obtained, and selected of the purest kind and freest from flaws and veins; whereas in large lenses it was extremely difficult to obtain one entire mass of glass free from impurities and imperfections. The spherical aber-

Buffon's
 lenses with
 concentric
 zones.

Burning
Glasses.Trudaine's
lens.

ration, which is very considerable in large glasses, can here be avoided by making the exterior segments of such focal lengths as to throw the rays to the same point with the central part. Fig. 6 shows a section of one of these lenses, and a view of one of the pieces.

The next burning lens of any magnitude was constructed by M. Bernieres, for M. Trudaine de Montigny, an honorary member of the Royal Academy of Sciences. This gentleman, whose liberality and zeal deserve to be recorded, engaged to be at the expense of a large burning glass, formed under the direction of several commissioners named by the academy. This lens consisted of two spherical segments eight feet radius and eight lines thick. The lenticular cavity was four feet in diameter, and six inches and five lines thick at the centre, and was filled with spirits of wine, of which it held no less than 140 pints. The focal length of a zone at the circumference, about six or seven lines broad, was ten feet and six lines, the focal length of a portion at the centre, about six inches in diameter, was ten feet seven inches and five lines, the diameter of the focus was fourteen lines and three fourths. When the whole surface was covered, except a zone at the circumference of six or seven lines, the following were the foci of the different rays:

	Feet.	Inches.	Lines.	
Violet	9	6	$4\frac{1}{2}$	from the centre of the lens.
Blue	9	7	$10\frac{1}{2}$	
Yellow	10	2	3	
Orange	10	2	10	
Red	10	3	$11\frac{1}{2}$	

The following experiments were made in October 1774, in the Jardin de l'Infante, by MM. Trudaine, Macquer, Cadet, Lavoisier, and Brisson, the commissioners appointed by the academy.

1. The burning power of the anterior half of the lens was much greater than that of the exterior half.

2. On the 5th of October, after mid-day, the sky not being very clear, two farthings placed upon charcoal were completely melted in half a minute.

3. In order to melt forged iron, it was found necessary to concentrate the rays by a second lens eight inches and a half diameter, twenty-two inches eight lines in focal length, and placed at eight feet seven inches from the centre of the great lens. At this place the cone of rays was eight inches in diameter, and the burning focus, now reduced to eight lines in diameter, was one foot from the small lens.

4. In the focus of the small lens, upon a piece of hollow charcoal small pieces of forged iron were placed, which were instantly melted. After fusion, the metal bubbled up, and fumed like nitre in fusion, and then sent off a great number of sparks. This effect (which was observed during the experiments with Tschirnhausen's lens) always took place after the fusion of iron, forged iron, or steel.

5. In order to try the effect upon greater masses, pieces of forged iron, and the end of a nail, were exposed to the focus, and were melted in fifteen seconds. A piece of nail five lines long and one fourth of a line square, which was added to the rest, was instantly fused; and the same was

the case with a screw that had a round head, and was eight lines in length.

6. Some days afterwards, a bar of steel, four inches long and four lines square, was exposed, so as to receive the focal image upon the middle of its length. This part was completely melted in five minutes, after having begun to run at the end of the second minute.

7. Platina, in grains, appeared to draw together, to diminish in bulk, and to prepare for fusion. A little after, it bubbled up and smoked. All the grains were united into one mass, without however forming a spherical button like other melted metals. After the platina had undergone this semifusion, it was not attracted by the magnet as it was before the operation.

8. A portion of platina, deprived of the iron which it contained, and therefore not affected by the magnet, lost a part of its bulk, smoked, and formed one mass, which was extended under the hammer.¹

9. Several experiments were made in order to find the lens that was most proper for collecting the rays after refraction by the large lens. A spirit of wine lens two feet in diameter and four feet focus, a solid lens eighteen inches in diameter and three feet focus, and another thirteen inches in diameter, were successively tried, but none of them produced such a powerful effect as the lens eight inches and a half in diameter, and twenty-two inches and eight lines focus, though it was full of vesicles and striæ.

Messrs Cadet and Brisson made a number of experiments on the refractive power of different fluids, by inclosing them in the lens of M. Trudaine, and observing the variations in its focal length. The object of their experiments was to find a fluid that possessed a greater refractive power than spirits of wine, and was at the same time sufficiently cheap and transparent to be used between the glass segments. Liquid turpentine was the most refractive fluid that they employed; but as they found that its dispersive power was to that of crown-glass as 34 to 28, this fluid was obviously, on this account, unfit for the purpose.² The fluid which they preferred was a saturated solution of sal-ammoniac or distilled water.

The most powerful burning-glass that has yet been constructed was made by Mr Parker of Fleet Street. After a great number of experiments, and an expense of above L.700, this able artist succeeded in completing a burning lens of flint-glass three feet in diameter. This powerful instrument is represented in fig. 7. The large lens, which is placed in the ring at A, is doubly convex, and when fixed in its frame, it exposes a surface of two feet eight inches and a half. It is three and a fourth inches thick at the centre, its focal distance is six feet eight inches, the diameter of the burning focus one inch, and the weight of the lens 212 pounds. The rays that were refracted by this lens were received (according to the method of Tschirnhausen) upon a second lens B, whose diameter is sixteen inches out of the frame, and thirteen inches in the frame; its central thickness is an inch and five eighths. The length of its focus is twenty-nine inches, the diameter of the focal image three eighths of an inch, and the weight of the lens twenty-one pounds. The combined focal length of these lenses is five feet three inches, and the diameter of the focus half an inch. These

¹ Messrs Macquer and Beaume are said to have melted small grains of platina by a concave glass twenty-two inches in diameter and twenty-eight inches focus.

² Cadet and Brisson, in the course of their experiments, were led to the discovery of achromatic fluid object-glasses, a discovery which has hitherto been referred to a much later date. This discovery is most distinctly contained in the following passage. "Comme la térébinthe cause une dispersion de rayons assez différente de celle que cause le verre, comme nous nous en sommes assurés par l'expérience, ne pourroit on pas faire des objectifs dans lesquels: pour les rendre achromatiques, on feroit usage de cette résine à la place du flint-glass, matière si difficile à se procurer d'une densité uniforme, et sans défauts, surtout en grands morceaux; mais le développement de cette idée nous meneroit trop loin, et ne fait pas partie de notre sujet actuel!" (*Mém. Acad. Par. 1777, p. 551.*)

lenses are placed at the extremities of a truncated conical frame, consisting of twelve ribs of wood. Near the smaller end B is fixed a rack D, which passes through the pillar L, and is movable by means of a pinion within the pillar, driven by the handle E. A bar of wood F, fixed at G, between the two lower ribs of the cone, carries an apparatus H, which turns on a universal joint at K, and also moves to or from F in a chased mortise. This apparatus, which carries the iron plate I for holding the substances to be examined, may thus be placed exactly in the focus of the lens B. The conical framing is supported by pivots upon a strong iron bow AC, which rests upon a mahogany frame LL, with three feet MMM furnished with castors. Friction wheels are placed under the table N, to facilitate the horizontal motion.

The following experiments with this lens were made in the presence of Major Gardner, and of several members of the Royal Society.

Substances fused, with their weight and time of fusion.	Weight in grains.	Time in seconds.
Common slate.....	10.....	2
Scoria of wrought iron.....	12.....	2
Gold, pure.....	20.....	3
Platina, do.....	10.....	3
Nickel.....	16.....	3
Cast iron, a cube.....	10.....	3
Silver, pure.....	20.....	4
Crystal pebble.....	7.....	6
Terra ponderosa, or barytes.....	10.....	7
Lava.....	10.....	7
Asbestos.....	10.....	10
Steel, a cube.....	10.....	12
Bar iron, do.....	10.....	12
Garnet.....	10.....	17
Copper, pure.....	33.....	20
Onyx.....	10.....	20
Zeolites.....	10.....	23
Pumice stone.....	10.....	24
An oriental emerald.....	2.....	25
Jasper.....	10.....	25
White agate.....	10.....	30
Flint, oriental.....	10.....	30
A topaz or chrysolite.....	3.....	45
Common limestone.....	10.....	55
Volcanic clay.....	10.....	60
Cornish moor-stone.....	10.....	60
White rhomboidal spar.....	10.....	60
Rough cornelian.....	10.....	75
Rotten stone.....	10.....	80

A diamond of ten grains, when exposed to the lens for thirty minutes, was reduced to six grains. It opened, foliated, and emitted whitish fumes, and when again closed it bore a polish and kept its form.

Gold retained its metallic state though exposed for many hours.

The specimens of platina were in different states of approach to a metallic form.

Copper did not lose any of its weight after an exposure of three minutes.

Iron steel shear melted first at the part in contact with the charcoal, while the other part exposed to the focus was unfused.

Iron scoria melted in much less time than the turnings of iron.

Calx of iron from vitriolic acid, precipitated by mild fixed alkali, weighed five grains before exposure, and five and a quarter after it.

The remains of regulus of zinc, after it had melted and was nearly evaporated, were magnetic.

Regulus of cobalt was completely evaporated in 57".

Regulus of bismuth exposed in charcoal was nearly evaporated. In black lead it began to melt in 2", and was soon after completely fused. Iron, on exposure of 180", lost only half a grain; when placed on bone ash it fused in 3".

Regulus of antimony, thirty-three grains, on charcoal, were fused in 3", and eleven grains only remained after 195".

Fine kearsl from the cannon foundry evaporated very fast during 120", and 30" afterwards the remainder flowed in globules, which were attracted by the magnet when cold.

Crystal pebble of North America, five grains, contracted in 15", were perfectly glazed in 135", ebullisced in 150", and became of a slate colour and semitransparent.

Agate, oriental flint, cornelian, and jasper, were rendered externally of a glossy form.

Garnet, placed upon black lead, fused in 120". It became of a darker hue, lost one fourth of a grain, and was attracted by the magnet. Ten cut garnets from a bracelet ran into one another in a few seconds.

Mr Wedgewood's pyrometrical clay ran into a white enamel in a few seconds. Other seven kinds of clay sent by that gentleman were vitrified.

Limestone was sometimes vitrified and sometimes agglutinated. A globule from one of the specimens flew into a thousand pieces when put into the mouth.

Stalactites zeolithus spatiosus, nine grains, took a globular form in 60". The globule began to become clear in 148". It became perfectly transparent in 155". When cold, its transparency diminished, and it assumed a beautiful red colour.

Lavas and other volcanic products likewise yielded to the power of this lens.

In the year 1802 Sir Joseph Banks, Dr Crawford, and some other members of the Royal Society, were present at an experiment for concentrating the lunar rays; but though the most sensible thermometers were applied, it was rather thought that there was a diminution than an increase of heat.

It was not to be expected that this powerful lens, which cost so large a sum of money, could have been retained in the hands of Mr Parker. That ingenious artist was naturally desirous to indemnify himself for the expense of its construction. A subscription was therefore opened for purchasing the lens as a national instrument; but this subscription failing, Mr Parker was induced to sell it to Captain Mackintosh, who accompanied Lord Macartney to China. This valuable instrument was left at Pekin, where it still remains.

This glass of Parker's is perhaps the largest solid lens that can be made in practice, without very great difficulties and expense in procuring so large a quantity of material of sufficient purity, and casting it in the lenticular form free of faults; and supposing these overcome, we have still the great thickness in the centre, and the enormous absorption of light in consequence of it, while the exterior portion of the glass by the spherical aberration disperses the rays from the focal point. With the compound lenses of Buffon, again, there is no limit to the magnitude further than what arises from the reflection of light near the circumference of the glass when the rays fall there very obliquely. If the diameter of the lens were to be equal to the chord of 48° of the sphere to which the lens has been formed, the whole of the incident light near the circumference would be reflected.

To augment still further the power of burning instruments, Dr Brewster proposes a compound instrument, sphere of which he terms a burning sphere, consisting of lenses and reflectors combined together,—a series of lenses be-

Brewster.

Burnisher ing arranged in a circle having their foci all in the centre, and having each a plane reflector so situated as to throw the sun's rays in the direction of the axis of the lens. The following is his description of it as represented in fig. 8, which is merely a section of the sphere, and represents only five of the lenses and four of the mirrors. The lenses A, B, C, D, E, which may be of any diameter and focal length, are so placed in the spherical surface AMN, that their principal foci exactly coincide in the point F. If any of the lenses have a different focal length from the rest, the coincidence of its focus with that of the other may be easily effected by varying its distance from F. The whole spherical surface, whose section is AMN, except a small opening for admitting the object to be fused, may be covered with lenses, having all their foci coincident at F; though it will, perhaps, be more convenient to have the posterior part MN without lenses, and occupied by a mirror of nearly the same radius FA as the sphere. The object of this mirror is to throw back upon the object at F the light that passes by it, without producing any effect. Each of the lenses, except the lens A, is furnished with a plane glass mirror, which may be either fixed to the general frame of the sphere, or placed upon a separate stand. When this combination is completed the sphere is exposed to the sun, so that its rays may fall at right angles upon the lens A, which will of course concentrate them at F, and produce a pretty intense heat. The plane mirror PQ, when properly adjusted, will reflect the sun's light perpendicularly upon the lens B, by which it will be refracted accurately to the focus F, and produce a degree of heat fully one half of what was produced by the direct refracted rays of the sun through the lens A. A similar effect will be produced by the mirror RS and lens D, the mirror TU and lens C, the mirror VW and lens E, and by all the other mirrors and lenses which are not seen in the section. The effect may be still further increased by the addition of a large lens at XX. As the angle which the surface of each mirror forms with the axis of its corresponding lens is a constant quantity, the mirrors may be all fixed to the general frame of the sphere, and therefore the only adjustment which the instrument will require is to keep the axis of the lens A parallel to the direction of the solar rays.

In order to estimate the advantages of this construction, let us compare its effects with those of a solid lens, which exposes the same area of glass to the incident rays.

1. In the burning sphere, almost the only diminution of light is that which arises from reflection by the plane mirrors, and which may be estimated pretty accurately at one half of the incident light; but this loss can be amply compensated by adding a few more lenses.

2. In the solid lens a great diminution of light arises from the thickness of the central portions, and from the obliquity of the parts at the circumference, which, we conceive, will be fully equal to the light lost by reflection in the burning sphere.

3. In the burning sphere the lenses may be obtained of much purer glass than can be got for a solid lens; and therefore, *ceteris paribus*, they will transmit more light.

4. Owing to the small size of each lens in the burning sphere, the diminution of effect arising both from spherical aberration and from the aberration of colour will be very much less than in the solid lens.

5. In the burning sphere the effect is greatly increased, in consequence of the shortness of the focal length of each lens, and the greater concentration of the incident light.

6. In the burning sphere all kinds of lenses may be combined. They may be made of any kind of glass, of any diameter, and of any focal length; and the lenses belonging to different individuals may be combined for any occasional experiment in which a great intensity of heat is requisite.

For further information on the subject of burning instruments, see Buffon, *Supplément à Histoire Naturelle*, tome première, 4to; *Sixième Mémoire*, p. 399; Kircher, *Ars Magna Lucis et Umbrae*, p. 772; Wolfii, *Opera Mathematica*, tom. ii. p. 165; Traberus, *In Nervo Optic.* lib. ii.; *Phil. Trans.* No. 6, p. 95; *Ibid.* No. 33, p. 631; *Ibid.* No. 40, p. 795; *Ibid.* 1719, vol. xxx.; No. 360, p. 976; *Ibid.* 1687, vol. xvi.; Tschirnhausen, vol. xix. 1768; Vilette, *Journal des Savans*, 1666; La Garouste, *Mém. Acad. Par.* 1679, tom. i.; Nollet, *Mém. Acad. Par.* 1757; Courtivron, *Mém. Acad. Par.* 1747; Trudaine, *Mém. Acad. Par.* 1774; Cadet and Brisson, *Mém. Acad. Par.* 1777; *Act. Erudit.* 1687; Richman, *Nov. Com. Petrop.* tom. iii.; Zeiher, *Nov. Com. Petrop.* tom. vii. 1758, 1759; *Journal Encyclopedique*, 1777; Dupuy, *Mém. Acad. Inscript.* 1777; *Œuvres d'Archimède*, par T. Peyrard, tom. ii.; Bossuet, *Histoire des Mathématiques*; Duten, *Du Miroir Ardent d'Archimède*, Paris, 1755; *A description of the great Burning Glass made by M. Vilette and his two Sons, with some Remarks on the surprising and wonderful effects thereof*, London, 1719, &c. (c.)

BURNISHER, a round polished piece of steel, serving to smooth and give a lustre to metals. Of these there are different kinds, of different figures, straight, crooked, and the like. Half burnishers are used to solder silver, as well as to give it a lustre. Burnishers for gold and silver are commonly made of a dog's or wolf's tooth, set in the end of an iron or wooden handle. Of late agates and pebbles have been introduced, which many prefer to the dog's tooth. The burnishers used by engravers in copper, usually serve with one end to burnish, and with the other to scrape.

BURNISHING, the art of smoothing or polishing a metalline body, by a brisk rubbing of it with a burnisher.

BURNLEY, a market-town of the parish of Whalley, and hundred of Blackburn, in the county of Lancaster, 210 miles from London. The district abounds with coal, the raising of which, as well as stones and slate, is the chief labour in which the inhabitants find occupation. The market is held on Saturday. The population amounted in 1801 to 3305, in 1811 to 4368, and in 1821 to 6378.

BURNS, ROBERT, the national bard of Scotland, was

born on the 25th of January 1759, in a clay-built cottage about two miles south of the town of Ayr. He was the eldest son of William Burnes, or Burness, who at the period of Robert's birth was gardener and overseer to a gentleman of small estate; but resided on a few acres of land which he had on lease from another person. The father was a man of strict religious principles, and also distinguished for that penetration and knowledge of mankind which was afterwards so conspicuous in his son. The mother of the poet was likewise a very sagacious woman, and possessed an inexhaustible store of ballads and legendary tales, with which she nourished the infant imagination of him whose own productions were destined to excel them all.

These worthy individuals laboured diligently for the support of an increasing family; nor, in the midst of harassing struggles, did they neglect the mental improvement of their offspring; a characteristic of Scottish parents, even under the most depressing circumstances. In his sixth year Robert was put under the tuition of one Campbell, and subsequently under Mr John Murdoch, a

Burns. very faithful and pains-taking teacher. With this individual he remained for a few years, and was accurately instructed in the first principles of composition. The poet and his brother Gilbert were the aptest pupils in the school, and were generally at the head of the class. Mr Murdoch, in afterwards recording the impressions which the two brothers made on him, says, "Gilbert always appeared to me to possess a more lively imagination, and to be more of the wit, than Robert. I attempted to teach them a little church-music. Here they were left far behind by all the rest of the school. Robert's ear in particular was remarkably dull, and his voice untunable. It was long before I could get them to distinguish one tune from another. Robert's countenance was generally grave, and expressive of a serious, contemplative, and thoughtful mind. Gilbert's face said, *Mirth, with thee I mean to live*; and certainly, if any person who knew the two boys had been asked which of them was the most likely to court the muses, he would never have guessed that Robert had a propensity of that kind."

Besides the tuition of Mr Murdoch, Burns received instructions from his father in writing and arithmetic. Under their joint care he made rapid progress, and was remarkable for the ease with which he committed devotional poetry to memory. The following extract from his letter to Dr Moore in 1787 is interesting, from the light which it throws upon his progress as a scholar, and on the formation of his character as a poet:—"At those years," says he, "I was by no means a favourite with any body. I was a good deal noted for a retentive memory, a stubborn sturdy something in my disposition, and an enthusiastic idiot piety. I say *idiot* piety, because I was then but a child. Though it cost the schoolmaster some thrashings, I made an excellent scholar; and by the time I was ten or eleven years of age, I was a critic in substantives, verbs, and particles. In my infant and boyish days, too, I owed much to an old woman who resided in the family, remarkable for her ignorance, credulity, and superstition. She had, I suppose, the largest collection in the country, of tales and songs concerning devils, ghosts, fairies, brownies, witches, warlocks, spunkies, kelpies, elf-candles, dead-lights, wraiths, apparitions, cantrips, giants, enchanted towers, dragons, and other trumpery. This cultivated the latent seeds of poetry; but had so strong an effect on my imagination, that to this hour, in my nocturnal rambles, I sometimes keep a sharp look-out in suspicious places; and though nobody can be more sceptical than I am in such matters, yet it often takes an effort of philosophy to shake off these idle terrors. The earliest composition that I recollect taking pleasure in was *The Vision of Mirza*, and a hymn of Addison's, beginning, *How are thy servants blest, O Lord!* I particularly remember one half-stanza, which was music to my boyish ear—

For though on dreadful whirls we hung
High on the broken wave.—

I met with these pieces in *Mason's English Collection*, one of my school-books. The first two books I ever read in private, and which gave me more pleasure than any two books I ever read since, were, *The Life of Hannibal*, and *The History of Sir William Wallace*. Hannibal gave my young ideas such a turn, that I used to strut in raptures up and down after the recruiting drum and bagpipe, and wish myself tall enough to be a soldier; while the story of Wallace poured a tide of Scottish prejudice into my veins, which will boil along there till the flood-gates of life shut in eternal rest."

Mr Murdoch's removal from Mount Oliphant deprived Burns of his instructions; but they were still continued by the father of the bard. About the age of fourteen he

was sent to school every alternate week for the improvement of his writing. In the meanwhile he was busily employed upon the operations of the farm; and, at the age of fifteen, was considered as the principal labourer upon it. About a year after this he gained three weeks of respite, which he spent with his old tutor Murdoch at Ayr, in revising the English grammar, and in studying the French language, in which he made uncommon progress. Ere his sixteenth year elapsed, he had considerably extended his reading. The vicinity of Mount Oliphant to Ayr afforded him facilities for gratifying what had now become a passion. Among the books which he had perused were some plays of Shakspeare, Pope, the works of Allan Ramsay, and a collection of songs which constituted his *vademecum*. "I pored over them," says he, "driving my cart or walking to labour, song by song, verse by verse, carefully noticing the true tender or sublime from affectation and fustian." So early did he evince his attachment to the lyric muse, in which he was destined to surpass all who have gone before or succeeded him.

At this period the family removed to Lochlea, in the parish of Tarbolton. Some time before, however, he had made his first attempt in poetry. It was a song addressed to a rural beauty about his own age; and though possessing no great merit as a whole, it contains some lines and ideas which would have done honour to him at any age. After the removal to Lochlea his literary zeal slackened, for he was thus cut off from those acquaintances whose conversation stimulated his powers, and whose kindness supplied him with books. For about three years after this period he was busily employed upon the farm; but at intervals he paid his addresses to the poetic muse, and with no common success. The summer of his nineteenth year was spent in the study of mensuration, surveying, &c. at a small sea-port town, a good distance from home. He returned to his father's considerably improved. "My reading," says he, "was enlarged with the very important addition of Thomson's and Shenstone's works. I had seen human nature in a new phasis; and I engaged several of my school-fellows to keep up a literary correspondence with me. This improved me in composition. I had met with a collection of letters by the wits of Queen Anne's reign, and I pored over them most devoutly; I kept copies of any of my own letters that pleased me; and a comparison between them and the composition of most of my correspondents flattered my vanity. I carried this whim so far, that though I had not three farthings worth of business in the world, yet almost every post brought me as many letters as if I had been a broad plodding son of day-book and ledger."

His mind, peculiarly susceptible of tender impressions, was continually the slave of some rustic charmer. In the "heat and whirlwind of his love," he generally found relief in poetry, by which, as by a safety valve, his turbulent passions were allowed to have vent. He formed the resolution of entering the matrimonial state; but his circumscribed means of subsistence as a farmer preventing his taking that step, he resolved on becoming a flax-dresser, for which purpose he removed to the town of Irvine in 1781. The speculation turned out unsuccessful; for the shop catching fire, was burnt, and the poet returned to his father without a sixpence. During his stay at Irvine he had met with Ferguson's poems. This circumstance was of some importance to Burns, for it roused his poetic powers from the torpor into which they had fallen, and in a great measure finally determined the *Scottish* character of his poetry. He here also contracted some friendships, which he himself says did him mischief; and, by his brother Gilbert's account, from this date there was a serious change in his conduct. The venerable and ex-

Burns.

cellent parent of the poet died soon after his son's return. The support of the family now devolving upon Burns, in conjunction with his brother he took a sub-lease of the farm of Mossiel, in the parish of Mauchline. The four years which he resided upon this farm were the most important of his life. It was here he felt that nature had designed him for a poet; and here, accordingly, his genius began to develop its energies in those strains which will make his name familiar to all future times, the admiration of every civilized country, and the glory and boast of his own.

The vigour of Burns's understanding, and the keenness of his wit, as displayed more particularly at masonic meetings and debating clubs, of which he formed one at Mauchline, began to spread his fame as a man of uncommon endowments. He now could number as his acquaintance several clergymen, and also some gentlemen of substance; amongst whom was Mr Gavin Hamilton, writer in Mauchline, one of his earliest patrons. One circumstance more than any other contributed to increase his notoriety. "Polemical divinity," says he to Dr Moore in 1787, "about this time was putting the country half mad; and I, ambitious of shining in conversation-parties on Sundays, at funerals, &c. used to puzzle Calvinism with so much heat and indiscretion, that I raised a hue-and-cry of heresy against me, which has not ceased to this hour." The farm which he possessed belonged to the Earl of Loudon, but the brothers held it in sub-lease from Mr Hamilton. This gentleman was at open feud with one of the ministers of Mauchline, who was a rigid Calvinist. Mr Hamilton maintained opposite tenets; and it is not matter of surprise that the young farmer should have espoused his cause, and brought all the resources of his genius to bear upon it. The result was *The Holy Fair*, *The Ordination*, *Holy Willie's Prayer*, and other satires, as much distinguished for their coarse severity and bitterness, as for their genius.

The applause which greeted these pieces emboldened the poet, and encouraged him to proceed. In his life by his brother Gilbert, a very interesting account is given of the occasions which gave rise to the poems, and the chronological order in which they were produced. The exquisite pathos and humour, the strong manly sense, the masterly command of felicitous language, the graphic power of delineating scenery, manners, and incidents, which appear so conspicuously in his various poems, could not fail to call forth the admiration of those who were favoured with a perusal of them. But the clouds of misfortune were gathering darkly above the head of him who was thus giving delight to a large and widening circle of friends. The farm of Mossiel proved a losing concern; and an amour with Miss Jane Armour, afterwards Mrs Burns, had assumed so serious an aspect, that he at first resolved to fly from the scene of his disgrace and misery. One trait of his character, however, must be mentioned. Before taking any steps for his departure, he met Miss Armour by appointment, and gave into her hands a written acknowledgment of marriage, which, when produced by a person in her situation, is, according to the Scots law, to be accepted as legal evidence of an *irregular* marriage having really taken place. This the lady burned at the persuasion of her father, who was adverse to a marriage; and Burns, thus wounded in the two most powerful feelings of his mind, his love and pride, was driven almost to insanity. Jamaica was his destination; but as he did not possess the money necessary to defray the expense of his passage out, he resolved to publish some of his best poems, in order to raise the requisite sum. These views were warmly promoted by some of his more opulent friends; and a sufficiency of subscribers having been procured, one

of the finest volumes of poetry that ever appeared in the world issued from the provincial press of Kilmarnock.

It is hardly possible to imagine with what eager admiration and delight they were everywhere received. They possessed in an eminent degree all those qualities which invariably contribute to render any literary work quickly and permanently popular. They were written in a phraseology of which all the powers were universally felt, and which being at once antique, familiar, and now rarely written, was therefore fitted to serve all the dignified and picturesque uses of poetry, without making it unintelligible. The imagery and the sentiments were at once natural, impressive, and interesting. Those topics of satire and scandal in which the rustic delights; that humorous imitation of character, and that witty association of ideas familiar and striking, yet not naturally allied to one another, which has force to shake his sides with laughter; those fancies of superstition, at which one still wonders and trembles; those affecting sentiments and images of true religion, which are at once dear and awful to the heart; were all represented by Burns with the magical power of true poetry. Old and young, high and low, grave and gay, learned and ignorant, all were alike surprised and transported.

In the mean time, a few copies of these fascinating poems found their way to Edinburgh, and having been read to Dr Blacklock, obtained his warmest approbation; and he advised the author to repair to Edinburgh. Burns lost no time in complying with this request; and accordingly, towards the end of the year 1786, he set out for the capital, where he was received by Dr Blacklock with the most flattering kindness, and introduced to every person of taste among that excellent man's friends. Multitudes now vied with each other in patronising the rustic poet. Those who possessed at once true taste and ardent philanthropy were soon united in his praise; those who were disposed to favour any good thing belonging to Scotland, purely because it was Scottish, gladly joined the cry; while those who had hearts and understandings to be charmed without knowing why, when they saw their native customs, manners, and language, made the subjects and the materials of poesy, could not suppress that impulse of feeling which struggled to declare itself in favour of Burns.

Thus did Burns, ere he had been many weeks in Edinburgh, find himself the object of universal curiosity, favour, admiration, and fondness. He was sought after, courted with attentions the most respectful and assiduous, feasted, flattered, caressed, and treated by all ranks as the great boast of his country, whom it was scarcely possible to honour and reward in a degree equal to his merits.

A new edition of his poems was called for; and the public mind was directed to the subject by Henry Mackenzie, who dedicated a paper in the *Lounger* to a commendatory notice of the poet. This circumstance will ever be remembered to the honour of that polished writer, not only for the warmth of the eulogy he bestowed, but because it was the first printed acknowledgment which had been made to the genius of Burns. The copy-right was sold to Creech for L.100; but the friends of the poet advised him to forward a subscription. The patronage of the Caledonian Hunt, a very influential body, was obtained. The list of subscribers rapidly rose to 1500; many gentlemen paying a great deal more than the price of the volume; and it was supposed that the poet derived from the subscription and the sale of his copy-right a clear profit of at least L.700.

The conversation of Burns, according to the testimony of all the eminent men who heard him, was even more wonderful than his poetry. He affected no soft air nor graceful motions of politeness, which might have ill accorded

Burns. with the rustic plainness of his native manners. Conscious superiority of mind taught him to associate with the great, the learned, and the gay, without being overawed into any such bashfulness as might have rendered him confused in thought or hesitating in elocution. He possessed withal an extraordinary share of plain common sense or mother-wit, which prevented him from obtruding upon persons, of whatever rank, with whom he was admitted to converse, any of those effusions of vanity, envy, or self-conceit, in which authors who have lived remote from the general practice of life, and whose minds have been almost exclusively confined to contemplate their own studies and their own works, are but too prone to indulge. In conversation he displayed a sort of intuitive quickness and rectitude of judgment upon every subject that arose. The sensibility of his heart, and the vivacity of his fancy, gave a rich colouring to whatever opinions he was disposed to advance; and his language was thus not less happy in conversation than in his writings. Hence those who had met and conversed with him once, were pleased to meet and to converse with him again and again.

For some time he associated only with the virtuous, the learned, and the wise, and the purity of his morals remained uncontaminated. But unfortunately he fell, as others have fallen in similar circumstances. He suffered himself to be surrounded by persons who were proud to tell that they had been in company with Burns, and had seen Burns as loose and as foolish as themselves. He now also began to contract something of arrogance in conversation. Accustomed to be among his associates what is vulgarly but expressively called "the cock of the company," he could scarcely refrain from indulging in a similar freedom and dictatorial decision of talk, even in the presence of persons who could less patiently endure presumption.

After remaining some months in the Scottish metropolis, basking in the noontide sun of a popularity which, as Dugald Stewart well remarks, would have turned any head but his own, he formed a resolution of returning to the shades whence he had emerged, but not before he had perambulated the southern border. On the 6th of May 1787 he set out on his journey, and, visiting all that appeared interesting on the north of the Tweed, proceeded to Newcastle and other places on the English side. He returned in about two months to his family at Mauchline; but in a short period he again set out on an excursion to the north, where he was most flatteringly received by all the great families. On his return to Mossgiel he completed his marriage with Miss Armour. He then concluded a bargain with Mr Miller of Dalswinton, for a lease of the farm of Elliesland, on advantageous terms.

Burns entered on possession of this farm at Whitsunday 1788. He had formerly applied with success for an excise commission, and during six weeks of the summer of this year he had to attend to the business of that profession at Ayr. His life for some time was thus wandering and unsettled; and Dr Currie mentions this as one of his chief misfortunes. Mrs Burns came home to him towards the end of the year, and the poet was accustomed to say that the happiest period of his life was the first winter he spent in Elliesland. The neighbouring farmers and gentlemen, pleased to obtain for a neighbour the poet by whose works they had been delighted, kindly sought his company, and invited him to their houses. Burns, however, found an inexpressible charm in sitting down beside his wife, at his own fireside; in wandering over his own grounds; in once more putting his hand to the spade and the plough; in forming his inclosures, and managing his cattle. For some months he felt almost all that felicity which fancy had taught him to expect in his new situation. He had been for a time idle; but his muscles were

not yet unbraced for rural toil. He now seemed to find a joy in being the husband of the mistress of his affections, and in seeing himself the father of children such as promised to attach him for ever to that modest, humble, and domestic life, in which alone he could hope to be permanently happy. Even his engagements in the service of the excise did not, at first, threaten either to contaminate the poet or to ruin the farmer.

From various causes, the farming speculation did not succeed. Indeed, from the time he obtained a situation under government, he gradually began to sink the farmer in the exciseman. Occasionally he assisted in the rustic occupations of Elliesland, but for the most part he was engaged in very different pursuits. In his professional perambulations over the moors of Dumfriesshire he had to encounter temptations which a mind and temperament like his found it difficult to resist. His immortal works had made him universally known and enthusiastically admired; and accordingly he was a welcome guest at every house, from the most princely mansion to the lowest country inn. In the latter he was too frequently to be found as the presiding genius, and master of the orgies. However, he still continued at intervals to cultivate the muse; and, besides a variety of other pieces, he produced at this period the inimitable poem of *Tam o' Shanter*. Johnson's *Miscellany* was also indebted to him for the finest of its lyrics. One pleasing trait of his character must not be overlooked. He superintended the formation of a subscription library in the parish, and took the whole management of it upon himself. These institutions, though common now, were not so at the period of which we write; and it should never be forgotten that Burns was amongst the first, if not the very first, of their founders in the rural districts of southern Scotland.

Towards the close of 1791 he finally abandoned his farm; and obtaining an appointment to the Dumfries division of excise, he repaired to that town on a salary of £70 per annum. All his principal biographers concur in stating that after settling in Dumfries his moral career was downwards. Heron, who had some acquaintance with the matter, says, "His dissipation became still more deeply habitual; he was here more exposed than in the country to be solicited to share the revels of the dissolute and the idle; foolish young men flocked eagerly about him, and from time to time pressed him to drink with them, that they might enjoy his wit. The Caledonian Club, too, and the Dumfriesshire and Galloway Hunt, had occasional meetings in Dumfries after Burns went to reside there; and the poet was of course invited to share their conviviality, and hesitated not to accept the invitation. In the intervals between his different fits of intemperance he suffered the keenest anguish of remorse, and horribly afflictive foresight. His Jane behaved with a degree of conjugal and maternal tenderness and prudence, which made him feel more bitterly the evil of his misconduct, although they could not reclaim him."

This is a dark picture, perhaps too dark. The Rev. Mr Gray, who, as the teacher of his son, was intimately acquainted with Burns, and had frequent opportunities of judging of his general character and deportment, gives a more amiable portrait of the bard. Being an eye-witness, the testimony of this gentleman must be allowed to have some weight. "The truth is," says he, "Burns was seldom intoxicated. The drunkard soon becomes besotted, and is shunned even by the convivial. Had he been so, he could not have long continued the idol of every party." This is strong reasoning; and he goes on to mention other circumstances which seem to confirm the truth of his position. In balancing these two statements, a juster estimate of the moral deportment of Burns may be formed.

Burns.

In the year 1792 party politics ran to a great height in Scotland, and the liberal and independent spirit of Burns did certainly betray him into some indiscretions. A general opinion prevails, that he so far lost the good graces of his superiors by his conduct, as to consider all prospects of future promotion as hopeless. But this appears not to have been the case; and the fact that he acted as supervisor before his death is a strong proof to the contrary. Of his political verses few have as yet been published. But in these he warmly espoused the cause of the Whigs, which kept up the spleen of the other party, already sufficiently provoked; and this may in some measure account for the bitterness with which his own character was attacked.

Whatever opinion may be formed of the extent of his dissipation in Dumfries, one fact is unquestionable, that his powers remained unimpaired to the last; it was there he produced his finest lyrics, and they are the finest, as well as the purest, that ever delighted mankind. Besides Johnson's *Museum*, in which he took an interest to the last, and contributed most extensively, he formed a connection with Mr George Thomson of Edinburgh. This gentleman had conceived the laudable design of collecting the national melodies of Scotland, with accompaniments by the most eminent composers, and poetry by the most eminent writers, in addition to those words which were originally attached to them. From the multitude of songs which Burns wrote from the year 1792 till the commencement of his illness, it is evident that few days could have passed without his producing some stanzas for the work. The following passage from his correspondence, which was also most extensive, proves that his songs were not hurriedly got up, but composed with the utmost care and attention. "Until I am complete master of a tune in my own singing, such as it is," says he, "I can never compose for it. My way is this. I consider the poetic sentiment correspondent to my idea of the musical expression,—then choose my theme,—compose one stanza. When that is composed, which is generally the most difficult part of the business, I walk out,—sit down now and then,—look out for objects in nature round me that are in unison or harmony with the cogitations of my fancy, and workings of my bosom,—humming every now and then the air, with the verses I have framed. When I feel my muse beginning to jade, I retire to the solitary fireside of my study, and there commit my effusions to paper; swinging at intervals on the hind legs of my elbow-chair, by way of calling forth my own critical strictures, as my pen goes. Seriously, this, at home, is almost invariably my way." This is not only interesting for the light which it throws upon his method of composition, but it proves that conviviality had not as yet greater charms for him than the muse.

From his youth Burns had exhibited ominous symptoms of a radical disorder in his constitution. A palpitation of the heart, and a derangement of the digestive organs, were conspicuous. These were, doubtless, increased by his indulgences, which became more frequent as he drew towards the close of his career. In the autumn of 1795 he lost an only daughter, which was a severe blow to him. Soon afterwards he was seized with a rheumatic fever; and "long the die spun doubtful," says he, in a letter to his faithful friend Mrs Dunlop, "until, after many weeks of a sick bed, it seems to have turned up life, and I am beginning to crawl across my room." The cloud behind which his sun was destined to be eclipsed at noon had begun to darken above him. Before he had completely recovered, he had the imprudence to join a festive circle; and, on his return from it, he caught a cold, which brought back his trouble upon him with redoubled severity. Sea-bathing was had recourse to, but with no ultimate success.

He lingered until the 21st of July 1796, when he expired. The interest which the death of Burns excited was intense. All differences were forgotten; his genius only was thought of. On the 26th of the same month he was conveyed to the grave, followed by about ten thousand individuals of all ranks, many of whom had come from distant parts of the country to witness the solemnity. He was interred with military honours by the Dumfries volunteers, to which body he had belonged.

Thus, at the age of thirty-seven, an age when the mental powers of man have scarcely reached their climax, died Robert Burns, one of the greatest poets whom his country has produced. It is unnecessary to enter into any lengthened analysis of his poetry or character. His works are universally known and admired, and criticism has been drawn to the dregs upon the subject; and that, too, by the greatest masters who have appeared since his death,—no mean test of the great merits of his writings. He excels equally in touching the heart by the exquisiteness of his pathos, and exciting the risible faculties by the breadth of his humour. His lyre had many strings, and he had equal command over them all; striking each, and frequently in chords, with the skill and power of a master. That his satire sometimes degenerates into coarse invective, cannot be denied; but where personality is not permitted to interfere, his poems of this description may take their place beside any thing of the kind which has ever been produced, without being disgraced by the comparison. It is unnecessary to re-echo the praises of his best pieces, as there is no epithet of admiration which has not been bestowed upon them. Those who had best opportunities of judging, are of opinion that his works, stamped as they are with the impress of sovereign genius, fall short of the powers he possessed. It is therefore to be lamented that he undertook no great work of fiction or invention. Had circumstances permitted, he would probably have done so; but his excise duties, and without doubt his own follies, prevented him. His passions were strong, and his capacity of enjoyment corresponded with them. These continually precipitated him into the vortex of pleasure, where alone they could be gratified; and the re-action consequent upon such indulgences (for he possessed the finest discrimination between right and wrong) threw him into low spirits, to which he was also constitutionally liable. His mind, being thus never for any length of time in an equable tone, could scarcely pursue with steady regularity a work of any length. His moral aberrations, as detailed by some of his biographers, have been exaggerated, as already noticed. This has been proved by the testimony of many witnesses, from whose authority there can be no appeal; for they had the best opportunities of judging. In fine, it may be doubted whether he has not, by his writings, exercised a greater power over the minds of men, and the general system of life, than has been exercised by any other modern poet. A complete edition of his works, in four vols. 8vo, with a life, was published by Dr Currie of Liverpool. Editions have been since multiplied beyond number; and several excellent accounts of his life have been published, particularly that by Mr Lockhart.

BURNTISLAND, or BRUNTISLAND, a royal burgh and parish of Scotland, in the county of Fife, situated upon the Frith of Forth. It is slightly peninsular, but it does not appear to have been ever surrounded by the sea. It is well sheltered towards the north by steep hills; and accordingly the harbour, which lies on its western quarter, is reckoned one of the safest in the frith. There is also a small light-house erected on the right of the entrance. The town is tolerably clean and well built, possessing one main street of considerable length, with a back one of lesser dimensions, and various diverging thoroughfares.

Burns.
island.

There is a large distillery here, and ship-building is carried on to some extent. In ancient times it was fortified, and the remains of a wall and fort are still extant. There is a regular ferry between Burntisland and Leith, from which it is distant six miles north-north-west. The population amounted in 1821 to 2136, and in 1831 to 2366.

BURRAMOOTE, a large town of Hindustan, in the province of Bejapoor, forty-four miles south-east from Poonah, and one mile from Merud. It has a strong fortification, divided by the Kurrah river.

BURROW, SIR JAMES, master of the crown office, was elected a fellow of the Royal Society and of the Society of Arts in 1751. On the death of Mr West in 1772, he was prevailed on to fill the president's chair at the Royal Society till the anniversary election, when he resigned it to Sir John Pringle; and on the 10th of August 1773, when the society presented an address to his majesty, he received the honour of knighthood. He published two volumes of reports in 1766; two others in 1771 and 1776; and a volume of decisions of the court of king's bench upon settlement cases from 1732 to 1772, to which was subjoined an Essay of Punctuation, in three parts, 4to, 1768, 1772, 1776. The Essay was also printed separately in 4to, 1773. He published, without his name, A few Anecdotes and Observations relating to Oliver Cromwell and his family, serving to rectify several errors concerning him, published by Nicol. Comm. Papadopoli, in his *Historia Gymnasii Patavini*, 1763, 4to. He died in 1782.

BURSA, a large walled city of Asiatic Turkey, in the province of Natolia, about six miles in circuit, including the suburbs. It is situated on eminences on each side of a height, and is surmounted by a castle, which is about a mile in circumference, and which antiquaries conjecture to be the ancient Prusa. The city is said to contain 300 mosques and churches, the tombs of several sultans, together with chapels of marble and jasper. The population consists of Turks, Greeks, Armenians, and Jews. The two latter, however, do not amount to more than 600 and 800 families. The Greeks dwell in a suburb west of the castle, and divided from it by a deep channel, planted with mulberry trees, and crossed by several bridges, one of them ninety paces long and sixteen broad, and occupied on each side by shops. The Greeks have three churches in this suburb, and their metropolitan. The Armenians inhabit a suburb to the east of the former, where they have a church and an archbishop. The town is resorted to for its mineral springs, which are reckoned salutary in various disorders. At the west end of the town a spring of cold and another of hot water rise in the same apartment; and in another bath called the New Spring, which is the largest and most beautiful of the whole, two hot streams issue from a copious fountain, and run through the middle of the room. There are various manufactures in the town, and an extensive trade. Satins in great variety, and chiefly striped, are made here, for the short under garments of the Turkish habit; and there are besides manufactures of silk stuffs and gauze, while quantities of raw silk are exported by the caravans to Aleppo, Smyrna, and Constantinople. Bursa is a very ancient city, and is generally supposed to have been built by Prusias, king of Bithynia, about five or six centuries before the Christian era. After experiencing many revolutions, it was captured by an Arab prince in the year 957, but was soon retaken and held by the Greeks. In 1356 it was conquered by the Turks under Othman II., and remained the capital of the Turkish empire until the conquest of Constantinople in 1452 by Mahommed II., when the seat of government was transferred to that city. The population is computed at 60,000. It is 75 miles south-south-west of Constantinople. Long. 29. 12. E. Lat. 40. 11. N.

VOL. V.

BURSAR, or BURSER (*Bursarius*), is used, in the middle-age writers, for a treasurer or cash-keeper. In this sense we meet with bursars of colleges. Conventual bursars were officers in monasteries, who were bound to deliver an account yearly on the day after Michaelmas. The word is formed from the Latin *bursa*, whence the English word *purse*; and hence also the officer, who in a college is called *bursar*, in a ship is called *purser*.

BURSARS, or *Bursors* (*Bursarii*), also denote those to whom stipends are paid out of a bursary or fund appointed for that purpose.

BURSARIA, the bursary, or exchequer of collegiate and conventual bodies; or the place of receiving, paying, and accounting, by the *bursarii* or bursars.

BURSE, in matters of commerce, denotes a public edifice in certain cities, for the meeting of merchants to negotiate bills, and confer on other matters relating to money and trade. In this sense bursary amounts to the same with what we otherwise call an *exchange*. The first place of this kind to which the name *Burse* was given was at Bruges. From this city the name was afterwards transferred to the like places in others, as in Antwerp, Amsterdam, Bergen in Norway, and London. This last, anciently known by the name of the *common burse of merchants*, had the denomination of the *royal exchange* given it by Queen Elizabeth. In the times of the Romans there were public places for the meeting of merchants in most of the trading cities in the empire: that built at Rome in the 259th year after its foundation, under the consulate of Appius Claudius and Publius Servilius, was denominated the *college of merchants*; some remains of it are still to be seen, and are known by the modern Romans under the name *loggia*. The Hans Towns, after the example of the Romans, gave the name of *colleges* to their bursars.

BURSLEM, a market-town of the hundred of Pirehill, in the county of Stafford, 151 miles from London, on an elevated spot near the Trent and Mersey Canal, about one mile from an underground tunnel 1880 yards in length. It is one of the most important towns in the potteries, in a thickly-peopled neighbourhood, where the chief employment is making the various kinds of earthenware. It has good markets on Mondays and Saturdays. The number of inhabitants amounted in 1801 to 6578, in 1811 to 8625, in 1821 to 9699, and in 1831 to 11,250.

BURTON, ROBERT, known to the learned by the name of *Democritus junior*, was a younger brother of the William Burton who wrote the *Antiquities of Leicestershire*, and born of an ancient family at Lindley, in that county, upon the 8th of February 1576. He was educated in grammatical learning in the free school of Sutton Colefield, in Warwickshire; in the year 1593 he was sent to Brazen-nose College in Oxford; and in 1599 he was elected student of Christ-church. In 1616 he had conferred upon him by the dean and canons of Christ-church, the vicarage of St Thomas, in the west suburb of Oxford, to the parishioners of which it is said that he always gave the sacrament in wafers; and this, with the rectory of Segrave in Leicestershire, given him some time afterwards by George Lord Berkeley, he held to the day of his death, which happened in January 1639. He was a man of general learning, a distinguished philosopher, an exact mathematician, and, what constitutes the peculiarity of his character, a very curious calculator of nativities. He was extremely studious, and of a melancholy turn; yet an agreeable companion, and very humorous. The *Anatomy of Melancholy*, by *Democritus junior*, as he calls himself, shows that these different qualities were strangely mixed together in his composition. This book was printed first in quarto, afterwards in folio, in 1624, 1632, 1638, and 1652, to the great emolument of the bookseller, who, as Mr Wood tells us, got an estate

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by it. Some circumstances attending his death occasioned strange suspicions. He died in his chamber at or very near the time which, it seems, he had some years before predicted from the calculation of his nativity; and this exactness made it whispered about that, for the glory of astrology, and rather than that his calculation should fail, he became a *felo de se*. This, however, was generally discredited. He was buried with due solemnity in the cathedral of Christ-church, and had a fair monument erected to his memory. He left behind him a very choice collection of books, many of which he bequeathed to the Bodleian Library, and a hundred pounds to Christ-church, the interest of which was to be laid out yearly in books for their library.

BURTON, *John*, D.D. a learned divine, was born in 1696, at Wembworth, in Devonshire, of which parish his father was rector. He was educated at Corpus Christi College, Oxford. In 1725, being then pro-proctor and master of the schools, he spoke a Latin oration before the determining bachelor, which is entitled "*Heli*, or an Instance of a Magistrate's erring through unseasonable Lenity; written and published with a view to encourage the salutary exercise of academical discipline;" and he afterwards treated the same subject still more fully in four Latin sermons before the university, and published them with appendixes. He also introduced into the schools, Locke, and other eminent modern philosophers, as suitable companions to Aristotle; and printed a double series of philosophical questions for the use of the younger students; from which Mr Johnson of Magdalen College, Cambridge, took the hint of his larger work of the same kind, which has gone through several editions. When the settling of Georgia was in agitation, Dr Bray, justly revered for his institution of parochial libraries, Dr Stephen Hales, Dr Berriman, and other learned divines, entreated Mr Burton's pious assistance in that undertaking. This he readily gave, by preaching before the society in 1732, and publishing his sermon, with an appendix on the state of that colony; and he afterwards published an account of the designs of the associates of Dr Bray, with an account of their proceedings. About the same time, on the death of Dr Edward Littleton, he was presented by Eton College to the vicarage of Maple-Derham, in Oxfordshire. Here a melancholy scene, which too often appears in the mansions of the clergy, presented itself to his view; a widow, with three infant daughters, without a home, without a fortune. From his compassion arose love, the consequence of which was marriage; for Mrs Littleton was handsome, elegant, accomplished, ingenious, and had great sweetness of temper. In 1760 he exchanged his vicarage of Maple-Derham for the rectory of Worplesdon in Surrey. In his advanced age, finding his eyes begin to fail him, he collected and published, in one volume, all his scattered pieces, under the title of *Opuscula Miscellanea*; and soon after died, on the 11th of February 1771.

BURTON-UPON-TRENT, a market-town of the hundred of Offlow, in the county of Stafford, 128 miles from London. The river Trent is navigable for large barges as high as the bridge at this town. It is celebrated for ale of peculiar excellence, and has some manufactures of hats, cotton goods, and iron, with several tanneries. The market, which is large, is held on Thursday. The country around it is very fertile in corn. The inhabitants amounted in 1801 to 3679, in 1811 to 3979, in 1821 to 4114, and in 1831 to 4399.

BURY, a market-town of the hundred of Salford, in the county of Lancaster, 194 miles from London, on the river Irwell. It is celebrated for its extensive printing grounds, which have been the foundation of the large fortune of

Sir Robert Peel. Some other branches of the cotton trade are carried on here. The market is held on Thursday, and well supplied. The inhabitants amounted in 1801 to 7072, in 1811 to 8762, in 1821 to 10,583, and in 1831 to 15,086.

BURY ST EDMUNDS, a market and borough town of the hundred of Thingoe, in the county of Suffolk, 71 miles from London. The river Bourn or Dark, which runs through the town, is navigable to Lynn. The ancient abbey is a magnificent pile of ruins. It is a clean, well-built, and well-paved town, with a handsome guild-hall, theatre, and other public buildings. The assizes for the county are held here. The markets are held on Wednesday and Friday. The inhabitants amounted in 1801 to 7655, in 1811 to 7986, in 1821 to 9999, and in 1831 to 11,436.

BURYING. See BURIAL.

BURYING Alive was the punishment of a vestal who had violated her vow of virginity. The unhappy priestess was let down into a deep pit, with bread, water, milk, oil, a lamp burning, and a bed to lie on. But this was only for show; for the moment she was let down, they began to cast in the earth upon her till the pit was filled up. Some middle-age writers seem to make burying alive the punishment of a female thief.

BURYING Place. The ancients buried out of cities and towns; a usage which we find equally among Jews, Greeks, and Romans. Amongst the last, burying within the walls was expressly prohibited by a law of the twelve tables. The usual places of interment were in the suburbs and fields, but especially by the way sides. We have instances, however, of persons buried in the city; but it was a favour allowed only to a few of singular merit in the commonwealth. Plutarch says, those who had triumphed were indulged in it. Be this as it will, Val. Publicola, and C. Fabricius, are said to have had tombs in the forum; and Cicero adds Tubertus to the number. Lycurgus allowed his Lacedemonians to bury their dead within the city and round their temples, that the youth, being inured to such spectacles, might be the less terrified with the apprehension of death. Two reasons are alleged why the ancients buried out of cities; the first, an opinion that the sight, touch, or even neighbourhood of a corpse, defiled a man, especially a priest; whence that rule in A. Gellius, that the *flamen dialis* might not on any account enter a place where there was a grave: the second, to prevent the air from being corrupted by the stench of putrified bodies, and the buildings from being endangered by the frequency of funeral fires.

Burying in churches was not allowed for the first three hundred years after Christ; and the same was severely prohibited by the Christian emperors for many ages afterwards. The first step towards it appears to have been the practice of erecting churches over the graves of some martyrs in the country, and translating the relics of others into churches in the city; the next was, allowing kings and emperors to be buried in the atrium or church-porch. In the sixth century, the people began to be admitted into the church-yards; and some princes, founders, and bishops, into the church. From that time the matter seems to have been left to the discretion of the bishop.

BUSBEC, AUGER GISEN, LORD OF, a person illustrious on account of his embassies, was born at Commines in the year 1522, and educated at the famous universities of Louvain, Paris, Venice, Bologna, and Padua. He was engaged in several important employments and negotiations, and in particular was twice sent ambassador by the king of the Romans to the emperor Soliman. He collected inscriptions, bought manuscripts, searched after rare plants, inquired into the nature of animals; and in his second journey to Constantinople carried with him a painter, that

Bury St
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Bury.

Busby he might be able to communicate to the curious the figures, at least, of the plants and animals that were not well known in the West. He wrote a Discourse of the State of the Ottoman Empire, and a Relation of his Two Journeys to Turkey, which are much esteemed. He died in 1592.

BUSBY, DR RICHARD, son of a gentleman in Westminster, was born at Luton in Lincolnshire in 1606. He passed through the classes in Westminster school as king's scholar, and completed his studies at Christ-church, Oxford. In 1640 he was appointed master of Westminster school; and by his skill and diligence in the discharge of this important and laborious office for the space of fifty-five years, bred up the greatest number of eminent men, in church and state, that ever at one time adorned any age or nation. He was severe in his school; though he applauded wit in his scholars, even when it reflected on himself. He died in 1695, aged eighty-nine, and was buried in Westminster Abbey, where there is a fine monument erected for him, with a Latin inscription. He composed several books for the use of his school.

BUSCHING, ANTHONY FREDERICK. This very eminent geographer was born at Stadthagen, a village of Westphalia, on the 27th September 1724. In his youth he laboured under peculiar disadvantages, arising from the disorderly life led by his father, and from the narrow means of education which his native town afforded. Fortunately a clergyman of the name of Hauber, pleased with the promising talents of the young man, undertook to give him gratuitous instruction. He laid a solid foundation of learning, and also of a piety which, though fervent, was always accompanied with moderation and mildness. At the age of eighteen, young Busching was driven from his father's house, on account of the zeal with which he espoused the cause of his patron, on occasion of a controversy in which he was involved. Hauber, however, procured for him the means of continuing his studies at Halle. There, by his application to learning, and his irreproachable conduct, he acquired numerous friends. They procured him the appointment of tutor in the family of the Count de Lynars, who was then going as ambassador to Petersburg. The observations made by Busching on this journey decided the pursuits of his future life. In travelling through Poland and Russia, he compared the actual features of those regions with the descriptions given of them. He thus became sensible of the miserably defective state of geographical science, and resolved to devote his life to its improvement. He withdrew as soon as possible from the count's family, and went to reside at Copenhagen, devoting himself entirely to this new pursuit. In 1752 he presented the first specimen of his powers in a *Description of the Counties of Sleswig and Holstein*, a work which produced a favourable idea of his accuracy and ability. He soon after removed to Göttingen, and married Christiana Dilthey, a young lady of great accomplishments, authoress of a volume of poems, and to whom he had been engaged from the time of his departure to Russia. Here, on account of a work which appeared to dissent from some of the Lutheran tenets, he was excluded from the theological chair, for which he had become a candidate. The chagrin occasioned by this disappointment induced him to accept an invitation to the German congregation at Petersburg. He was employed there, also, in organizing a school, which, under his auspices, soon became one of the most flourishing in the north. This school was superintended by Marshal Munich, who at first showed great favour to Busching; but being accustomed to entire obsequiousness from all connected with him, the marshal did not accommodate himself to the hardy independence of the German sage. A collision arose, in consequence of which Busching announced to his congregation that he

was under the necessity of returning to Germany. The empress expressed much dissatisfaction at the conduct of Munich, and made very high offers to Busching if he would consent to remain; but he deemed it unworthy of him, after having resisted the entreaties of his congregation, to yield to the favours of the court. He returned to Germany without any fixed object or establishment in life, and went at first to reside at Altona. Next year, however, he was called to superintend an extensive establishment for education, which had been formed at Berlin, under the auspices of the great Frederick. His appointments here were liberal, and his exertions proved of signal benefit to the institution of which he became the head. His writings and example gave a new impulse to education throughout Prussia. He spent a number of hours every day in the institute, superintended the progress of every pupil, and inspected the minutest details connected with its prosperity. He gave also courses of lectures on the history of the arts and sciences. This labour did not interrupt the composition of his numerous works. The queen loved his society, and at first often invited him to dine with her; but, finding that such engagements occupied too much of his time, he entreated her majesty to allow him to devote himself as much as possible to his numerous labours. Though seized with dropsy, which occasioned a series of the most cruel sufferings, he did not remit his academical labours, till the disease coming to a crisis, terminated his life on the 28th May 1793, in the 69th year of his age. His wife had died in 1777, and he had contracted a second marriage with Mademoiselle Reinbeck, the daughter of a clergyman at Berlin. By the first marriage he had two children, who survived him; by the second he had six, who, except one, all died in infancy.

Few authors, even in Germany, have produced a greater number of works than Busching. The entire number, as enumerated by Meusel, in his *Lexicon of German Authors*, amounts to more than a hundred. They may all be classed under the following heads: 1. Geography and History; 2. Education; 3. Religion; 4. Biography. The first class comprehends those upon which his fame chiefly rests. He possessed not, indeed, the geographical genius, if we may so speak, of D'Anville, his skill in the construction of maps, his quick eye, or his sagacity in eliciting the truth from hints and imperfect notices. He may be regarded, however, as the creator of modern *Statistics*, that science which exhibits the present state of every kingdom, its civil and political constitution, its wealth, the productions of nature, the exchanges of commerce, and the establishments for public instruction; all these particulars are detailed in his works in the fullest manner, and from the most careful investigation of original materials. His works, devoid of the ornaments of style, and composed of minute details, are rather useful to consult than profitable to read; but this is a fault to which most writers of his country are liable. His grand work is the *Neue Erdbeschreibung, New Geographical Description of the Globe*. The first four parts, which comprehend Europe, were published in four successive volumes, from 1754 to 1761, and have been translated into all the European languages. They appeared in English with a preface by Murdoch, in six volumes 4to, London, 1762. He published also, in 1768, the fifth part, being the first volume upon Asia, containing *Asiatic Turkey and Arabia*. It displays an immense extent of research, and is generally considered as his masterpiece; but it has not been translated either into French or English.

Besides this great geographical work, Busching was the editor of a valuable collection, entitled *Magazine for the History and Geography of Modern Times*, 22 vols. 4to, 1767-88; also of a *Journal appropriated to the Notice of Maps*, Berlin, 1773-87.

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The elementary works on education published by Busching are very numerous, and have long held a distinguished place, even in a country so eminent as Germany, in this branch of literature. If in some departments better works have now been produced, it is by labouring on the foundation of Busching. His theological writings are not very highly esteemed. In biography he wrote a number of articles for the *Historical Magazine*; also *A Collection of Biography*, in six volumes, 1783-9, including a very elaborate life of the great Frederick. (E.)

BUSEO, a town in the eastern division of Wallachia, the seat of a Greek bishop, and the capital of the district of the same name, which comprehends one other town, and 218 villages. It has several churches, mostly of the Greek communion, 1500 houses, and 4900 inhabitants, who carry on considerable trade.

BUSH, PAUL, the first bishop of Bristol, became a student in the university of Oxford about the year 1513, and in 1518 took the degree of bachelor of arts. He afterwards became a brother of the order called *bonhommes*; of which, after studying some time among the friars of St Austin, now Wadham College, he was elected provincial. In that station he lived many years, till at length King Henry VIII. being informed of his great knowledge in divinity and physics, made him his chaplain, and in 1542 appointed him to the new episcopal see of Bristol; but Bush having, in the reign of Edward VI., taken a wife, he was on the accession of Mary deprived of his dignity, and spent the remainder of his life in a private station at Bristol, where he died in the year 1558, aged sixty-eight, and was buried on the north side of the choir of the cathedral. Wood says, that while he was a student at Oxford, he was numbered among the celebrated poets of that university; and Pitt gives him the character of a faithful Catholic, notwithstanding his want of chastity. He wrote, 1. An Exhortation to Margaret Burgess, wife to John Burgess, clothier, of King's Wood, in the county of Wilts. London, printed in the reign of Edward VI. 8vo. 2. Notes on the Psalms. 3. Treatise in Praise of the Cross. 4. Answer to certain Queries concerning the abuse of the Mass, Records, No. 25. 5. Dialogues between Christ and the Virgin Mary. 6. Treatise of Slaves, and Curing Remedies. 7. A little treatise called the Extirpation of Ignorancy. 8. Carmina diversa.

BUSHEAB, an island in the Persian Gulf, about sixteen miles in length and five or six in breadth, separated from the mainland by a channel of considerable breadth, from which runs a long ridge of rocks. It is inhabited, and covered with date trees. The chief resides at the east end, and subsists partly by piratical adventures. Long. 53. 4. E. Lat. 27. 2. N.

BUSHEL. See WEIGHTS AND MEASURES.

BUSHIRE, ABUSCHEHR, a town of Persia, in the province of Fars, situated in the Persian Gulf. The surrounding country is a parched and barren desert, consisting of brown sand or grey clay and rock, unenlivened by any kind of vegetation. The town, which is of a triangular form, occupies the southern extremity of a peninsula eleven miles long and four broad, and is encircled on all sides except the south by water; but in high tides and storms it has sometimes been completely insulated. This, however, is not likely to happen again, as the water is fast receding from the town. It is fortified on the land side by a mud wall mounting twelve pieces of cannon. The streets are very narrow, and, like all the towns and villages in this country, it is but a mean place, being in fact little better than a collection of clay houses, surrounded by walls and towers of the same material. At a distance they can scarcely be discerned from the surface of the ground; they resemble any thing rather than the habitations of man; and they

are enveloped in dirt and every species of discomfort. The heat here is intolerable, ranging in summer from 87° to 90°, and sometimes to 100°, 105°, and 106°; so that few even of the natives can endure it. To add to this evil, there is scarcely a drop of sweet water to be had within the walls. There are wells in the sandy peninsula on which the town is situated, which are dug to the depth of thirty fathoms, and from which sweet water is brought from a great distance. The East India Company have a factory at this place, but the apartments are small, comfortless, and ill aired. A better house was at one time built, but the jealousy of the Persian government being awakened, an order was sent to raze it to the ground. A considerable exportation takes place of Persian commodities, such as carpets, wine of Shiraz, rose-water, drugs, &c.; and the imports are Indian goods of different kinds, and English manufactures. Not more than eight ships under English colours frequent the port, and about six under those of Muscat, making an average of about 4500 tons of shipping. The outer roads, where ships exceeding 300 tons burden can alone anchor, are upwards of six miles from the town. The anchorage is tolerably good; but during the fury of the north-west winds ships are frequently obliged to cut their cables and bear up for Karak. The inner roads afford better shelter, but are also at some distance from the shore. The population is said by Morier to amount to 10,000; others state it at 5000. It is ten miles west-south-west of Shiraz. Long. 50. 43. E. Lat. 28. 59. N.

BUSIRIS, in *Ancient Geography*, a city of Lower Egypt, to the south of Leontopolis, on that branch of the Nile called Busiriticus. It is said to have been built by Busiris, who was noted for his cruelty, and was slain by Hercules.

BUSK, a city of the circle of Lemberg, in the Austrian province of Galicia. It is situated on the river Bug, which runs from a beautiful lake here. The inhabitants are about 3150, and have four churches, three Greek and one Catholic, and manufactures of leather and of paper.

BUSKIN, a kind of shoe, somewhat in the form of a boot, and adapted to either foot, and worn by either sex. This part of dress, covering both the foot and mid-leg, was tied underneath the knee; it was very rich and fine, and principally used on the stage by actors in tragedy. It was of a quadrangular form; and the sole was so thick, that by means of it men of the ordinary stature might be raised to the pitch and elevation of the heroes they personated. The colour was generally purple on the stage; and herein it was distinguished from the sock worn in comedy, which was only a low common shoe. The buskin seems to have been worn not only by actors, but by girls, to increase their height; travellers and hunters also made use of it to defend themselves from the mire. In classic authors we frequently find the buskin used to signify tragedy itself; and it was also understood as signifying a lofty strain or elevated style.

BUSS, in maritime affairs, a small sea vessel, used in the herring fishery, commonly from forty-eight to sixty tons burden, and sometimes more. A buss has two small sheds or cabins, one at the prow and the other at the stern; and that at the prow serves for a kitchen.

BUSOLENGO, a town of the Austrian kingdom of Venetian Lombardy, in the delegation of Verona. It is situated on the river Etseh, and contains about 3000 inhabitants, chiefly employed in the manufacture of linen goods.

BUSSORA, BASSORA, BALSORA, or BASRA, a celebrated city of Asia, in the government of Bagdad, situated on the western bank of the Shut-ul-Arab, about seventy miles from the mouth of this noble stream, which is navigable to the city for ships of 500 tons burden. Bussora is surrounded by walls, which are kept in a tolerable state of repair.

Bussora. They have five gates, and are at the lowest computation about seven miles in circuit. They are washed by the river, which frequently inundates the low-lying plain in which the city is situated, so that it appears like an island in the middle of a lake. It is, without exception, the most filthy town that can be conceived; the streets are exceedingly narrow; and the stench arising from nuisances, everywhere exposed to view, is intolerable. The houses are meanly built, partly of sun-dried, and partly of burnt bricks, with flat roofs, surrounded by a parapet; and the bazars, though stocked with the richest merchandise, are miserable structures, not arched, as in Bagdad and the Persian towns, but covered with mats laid on rafters of date trees, which hardly afford protection from the scorching rays of the sun. Of the vast area within the walls, the greater proportion is occupied with gardens and plantations of palm trees, intersected by a number of little canals, cleaned twice a day, on the ebb and flow of the tide, which rises here about nine feet. The largest of these canals, which approaches the English factory and the palace of the governor, situated about two miles from the river, is continually crowded with small vessels. The town has scarcely any public buildings that deserve notice. It has khans and coffee-houses without number, a wretched humum, and upwards of forty mosques, of which one only is worthy of the name; and this, with the palace of the governor and the English factory, which are all contiguous to one another, are the only decent buildings in the place. The population is a heterogeneous mixture of all the nations in the East, and consists of Turks, Arabs, Indians, Persians, Armenians, Jacobites, and Jews. The Arabs, however, constitute the principal class; and the Turks, though they are masters of the town, are not numerous.

Bussora is a great emporium of Indian commerce. Three or four English ships of about 400 tons burden arrive in the course of a year from Calcutta; but the chief part of the traffic is carried on in Arabian bottoms; and the merchants of Muscat possess some of the finest vessels that navigate the Indian seas. From various parts of Hindustan, Bussora receives silk, muslin, linen, white and blue cloth for the clothing of the Arabians, gold and silver stuffs, various metals, sandal wood, and indigo; pearls from Bahrein, and coffee from Mocha; shawls, fruit, and the precious metals from Persia; spices from Java; and European commodities, which are scarce and dear, from different parts. The trade with the interior is conducted by means of caravans to Aleppo and Bagdad, whence the goods are conveyed to Constantinople. The returns are made in Indian goods, bullion, pearls, dates, copper, raw silk; horses, which being very strong and beautiful, are exported by the English; and gall-nuts. A Turkish fleet was formerly stationed here, which suppressed all piratical adventurers in the Persian Gulf. But it is now reduced to ten or twelve decayed hulks, incapable of unmooring out of the river; and the dignified office of capitan pasha, then held immediately under the Porte, is now one of the most insignificant appointments in the gift of the pasha of Bagdad.

The situation of the town is unhealthy, owing to the inundations of the river, from which noxious exhalations arise, and strangers are commonly attacked by fever after a short residence. The adjoining country is fertile, producing, besides rice, wheat, barley, and dates of different species, a variety of fruits and vegetables, such as apricots, apples, figs, olives, pomegranates, and grapes; and cabbages, broccoli, lettuce, onions, peas, beans, and truffles, in vast quantities. There are whole fields of roses, which the inhabitants cultivate for the purposes of distillation. The licorice plant also grows amidst the date groves on the borders of the river. The wild Arabs from the neigh-

Bust
||
Bustum.

boursing deserts frequently harass the peasants by their predatory incursions. To guard against these, and to protect the farms and country houses, Abdulla Aga has built a wall for sixty miles along the adjoining desert, at all the gates of which guards are placed. But flying parties of Arabs still break through this barrier, and annoy the peaceable inhabitants.

The city of Bussora was founded by Omar, A. D. 636; and its situation was so favourable for commerce, that in a few years it became a large and flourishing city. It was conquered by the Turks in 1668, and since that period has experienced many revolutions. It was taken in 1777, after a siege of eight months, by the Persians under Sadek Khan. In about a year it fell again into the hands of the Turks, who were again deprived of it by the sheik of the Montefidge Arabs. The town was in October following recovered by Solymán Pasha, who encountered the sheik on the banks of the Euphrates, and put him to flight. The governor has ever since been sent from Bagdad, and is generally an officer of high rank. The population is estimated at 60,000. It is 210 miles south from Isphahan, and 1815 south-east from Constantinople. Long. 44. 46. E. Lat. 30. 32. N. (Kinneir's *Geographical Memoir of the Persian Empire.*) (F.)

BUST, or **BUSTO**, in *Sculpture*, denotes the figure or portrait of a person in relievo, showing only the head, shoulders, and stomach, the arms being lopped off, and ordinarily placed on a pedestal or console.

In speaking of an antique, we say the head is marble, and the bust porphyry or bronze, that is, the stomach and shoulders. Felibien observes, that though in painting one may say a figure appears in busto, yet it is not properly called a *bust*, that word being confined to things in relievo. The bust is the same with what the Latins called *Hermes*, from the Greek Hermes, Mercury, the image of that god being frequently represented in this manner amongst the Athenians.

BUST is also used, especially by the Italians, for the trunk of a human body, from the neck to the hips.

BUSTAR, a town of Hindustan, in the province of Gundwana, the capital of an independent rajah, whose subjects are among the most barbarous of any people in Hindustan. Long. 82. 38. E. Lat. 19. 44. N.

BUSTARD. See *ORNITHOLOGY, Index*.

BUSTARD BAY, a bay on the east coast of New Holland, in which there is a channel leading to a large lagoon. There is space here for a few ships to lie in safety, but access to the lagoon is prevented by shallows. Around the sides of the bay are salt marshes and bogs, and mangroves grow in various places. The bay derived its name from one of Captain Cook's officers having shot a bustard here. Many other large birds frequent the shore, and great quantities of the hammer and pearl oysters are found under the mangroves. The country is but thinly inhabited, and the natives bear a resemblance to those in the other parts of New Holland. Long. 208. 18. W. Lat. 24. 4. S.

BUSTUARI, in *Roman Antiquity*, gladiators who fought about the bustum or funeral pile of a person of distinction, in order that the blood which was spilt might serve as a sacrifice to the infernal gods, and render them more propitious to the manes of the deceased. This custom was introduced in the room of the more inhuman one of sacrificing captives at the bustum, or on the tombs of warriors.

BUSTUM, in *Antiquity*, denotes a pyramid or pile of wood, whereon were anciently placed the bodies of the deceased, in order to be burnt.

The Romans borrowed the custom of burning their dead from the Greeks. The deceased, crowned with flowers, and dressed in his richest habits, was laid on the bustum. Some authors say it was only called *bustum* after the burn-

Bustum
||
Buteshire.

ing, *quasi bene ustum vel combustum* : before the burning it was more properly called *pyra*, during it *rogus*, and afterwards *bustum*. When the body was only burnt there, and buried elsewhere, the place was not properly called *bustum*, but *ustrini*, or *ustrinum*.

BUSTUM, in the *Campus Martius*, was a structure whereon the Emperor Augustus first, and after him the bodies of his successors, were burnt. It was built of white stone, surrounded with an iron pallsade, and planted within with alder trees.

BUSTUM was also figuratively applied to denote any tomb; whence the phrases *facere bustum*, *violare bustum*, and the like.

BUSTUM of an Altar, was the hearth or place where the fire was kindled.

BUSVAGON, an island in the Eastern Seas, belonging to the Philippines, fifty miles in length by thirteen in average breadth, and situated in the 12th degree of north latitude.

BUTCHER, a person who slaughters cattle for the use of the table, or who cuts up and retails the same. Among the ancient Romans there were three kinds of established butchers, whose office it was to furnish the city with the necessary cattle, and to take care of preparing and vending their flesh. The *suarii* provided hogs; the *pecuarii* or *boarii* other cattle, especially oxen; and under these was a subordinate class, whose office it was to kill, called *lanii* and *carnifices*.

BUTCHER-BIRD. See ORNITHOLOGY, *Index*.

BUTESHIRE, a county on the west coast of Scotland, in the Frith of Clyde, is composed of seven islands, viz. Bute, Arran, Great Cumbræ, Little Cumbræ, Inchmar-nock, Lam-lash, and Pladda.

Bute, from which the county derives its name, is situated between longitude 4. 51. and 5. 2. W., and latitude 55. 41. and 55. 43. N., and is sixteen miles west from Greenock, thirty-eight miles from Glasgow, and eighty-three from Edinburgh; but the usual route to these places is about four or five miles longer. It is about fifteen miles long, in a straight line from north-north-west to south-south-east, and the average breadth is three miles and a half, although it is much indented with bays: in some places it is not above half that breadth, but in other places it is at least a mile broader. It is separated on the north from the district of Cowal in Argyshire by the Kyles of Bute, which for a considerable distance along shore is not above half a mile broad. The more southerly part of the island is separated from Ayrshire by the Frith of Clyde, which is from five to seven miles broad; but the channel is much narrowed by the islands of Cumbræ, being situated betwixt Bute and Ayrshire, and distant from Bute about three miles, but much nearer Ayrshire. Arran lies off the south point of Bute, distant about eight miles; and Skipness in Argyshire bounds it on the west at about the same distance as Arran. There is considerable uncertainty as to the origin of the name of Bute. Some contend that it is derived from Both, signifying in the Irish tongue a cell; and they ground this on the fact, that it has been so written by ancient authors, and that St Brendan, an Irish abbot, caused a cell to be erected on it in the sixth century. It has been written Both, Bote, Boot, and Botis; but Mr Blain, some time commissary of the isles, and sheriff-substitute of Buteshire, in his manuscript history of Bute, endeavours to show, with considerable ingenuity, that it has been derived from the old British word Ey Budh, or Gaelic word Ey Bhiod, signifying the Island of Corn or Island of Food, from its being more fertile than the adjacent highland countries; and this opinion appears to be still further supported by the fact, that at the time of valuing the teinds, the grain in the island amounted to about

34,700 bolls. The Butemen were anciently considered as Buteshire a distinct people, and refused to be reckoned a part of the highlands, or even of the lowlands. The island contains about 30,000 English acres, of which about two thirds may be considered as arable; the remainder consists of woods, muirs, mosses, and lakes. There are six lakes in the island. The largest, Loch Fad, extended originally to 138 acres, but is now considerably enlarged by the embankments of the cotton spinning company, whose works are placed on the water flowing from this lake. Ascog Loch extends to seventy-two acres. The water flowing from this loch has also an excellent fall for a mill or other public work; but nothing further has yet been erected on it than a dye-work, and a carding and wauking mill. It is hoped, however, that it will soon be made more available. Quien Loch covers fifty-four acres; Greenan Loch, twelve acres; Loch Dhu, or Black Loch, nine acres; and Lochan-tarbh, five acres. The climate is very mild, genial, and healthy, more so than in any other part of the west of Scotland. It is frequently compared to Devonshire, and in some respects is considered as superior. The lofty mountains of Arran and Argyle skirt it on the west and south, and break the clouds coming from the Western Ocean, so that they pass over Bute with a discharge of comparatively but little of their contents, and less rain falls here than on the rest of the west coast of Scotland. In summer the air is kept cool by the sea breeze, and in winter the same cause prevents intense frost; while snow seldom falls to the depth of twelve inches, and very rarely remains above two or three days on the ground. The winds most prevalent blow from the south and west.

Agriculture, under the fostering care of the Marquis of Bute, has of late years made considerable progress in the island, especially in the middle and southern divisions. The soil in the southern half of the island is light and sandy; in the more northern it is of a clayey nature. The land is generally well subdivided with ditches and white-thorn hedges. Crops of all kinds common in the lowlands are produced in Bute.

Freestone and coal are both found in the island, but neither to any great extent. Several attempts have been made to get a good working vein of coals, but hitherto without success. But slate and lime are found in it. The slate has been principally wrought on the estate of Kames, formerly the seat of Sir William M'Leod Bannatyne, one of the lords of session, but now possessed by James Hamilton, Esq. The lime has been chiefly wrought in the south end of the island, in the parish of Kingarth; and that manufactured there is considered as equal, if not superior, in point of adhesiveness, to the far-famed Arden lime of Lanarkshire, when properly wrought; and it is much cheaper, though not so white in the colour. Inexhaustible beds of shells are found on the west side of the island, and considerable quantities of sea-weed are driven in upon the shores. The rocks in the north end are chiefly mica, clay, and chlorite slate, intersected with quartz and trap. Whinstone is chiefly found near the town of Rothesay, and sandstone stretches along from thence to the south.

Excellent banks for fishing are found round the island; and the herring fishery is prosecuted vigorously by the inhabitants, especially by residents in Rothesay.

The Marquis of Bute is the chief proprietor of the island. His seat is Mountstuart, beautifully situated on the east side of the island, about four miles from Rothesay. The real rent of his property in the island is about L.8000, including L.440 of feu-duty for ground feued chiefly within the burgh of Rothesay. The other proprietors of any extent are James Hamilton, Esq. of Kames, rent L.1500; Kirkman Findlay, Esq. of Kilmahalmag,

teshire. L.500; Robert Thom, Esq. of Ascog, L.300; M'Conechy of Ambrisbeg, L.70; James M'Kay of Garrachty, L.70.

The burgh of Rothesay, the capital of the island and shire, is beautifully situated at the head of a deep bay on the north-east side of the island, where there is safe anchorage-ground for vessels of any size and any wind, and room enough to contain a very large fleet. The territory of the burgh is about nine miles in circumference, extending fully a mile beyond the town on the east, south, and west sides. The burgh has an extensive harbour, built in 1822, at an expense of L.6000. The shipping belonging to this port carries upwards of 4000 tons. There is a large spinning factory, consisting of two mills, in Rothesay, driven by water from Loch Fad; and it may be worthy of notice, that the second mill erected in Scotland for the spinning of cotton was upon this water only about fifty-five years ago, when the business was carried on with the strictest secrecy. The house then used was a thatched building, which is still standing. A power-loom factory, wrought by a steam-engine, has lately been erected. But the herring fishery has proved the chief source of employment to the male population. In 1830 there were about 400 men and 3000 tons of shipping employed in this trade, besides a great number of small wherries occupied in fishing about the island and neighbourhood. Several steam-boats ply daily to and from Glasgow and the intermediate ports. These convey the mail; and in the summer season there are generally two, and sometimes three mails in the day.

There are four places of worship in Rothesay; the parish church, situated on a gentle eminence about a quarter of a mile from the town; a chapel of ease, erected in 1800; a united secession church; and a reformed Presbyterian church. The county jail is situated in Rothesay, where the head courts of the shire are held. The sheriff court is held every Wednesday, and the burgh court every Thursday. The ruins of an ancient castle, which was once the residence of the kings of Scotland, are situated in the middle of the town. It originally consisted of a circular court, 138 feet in diameter, surrounded by a wall eight feet thick and seventeen feet high, with battlements. It had four towers, and was surrounded by a wet ditch. It is supposed to have been built about the year 1100, though the particular date is not known. It is first mentioned in history in 1228. Heulbec, king of the Isles, was killed in besieging this castle in 1263. It was taken possession of by the English during the reign of John Baliol, but surrendered to Robert the Bruce in 1311. King Robert the Second built a palace adjoining the castle, and frequently took up his residence in it betwixt 1376 and 1398, when he created his eldest son Prince David Duke of Rothesay, a title which the king's eldest son still bears. This was the first dukedom conferred in Scotland. On the 12th January 1400 Robert granted the charter of erection of the burgh of Rothesay. He died in the castle of Rothesay on 4th April 1406, and was buried in the abbey of Paisley. This castle was burned by the Earl of Argyll's brother in 1685, and has since remained in ruins. The population of the burgh of Rothesay in 1831 was 4817, besides upwards of 300 seamen belonging to registered vessels, not included in the census.

The island is divided into two parishes, Rothesay and Kingarth; the former containing a population of 6084, including the burgh; and the latter 746; thus making the whole population of the island 6830, exclusive of seamen, of whom there are betwixt 300 and 400 belonging to or connected with registered vessels. This island is highly esteemed, and is much resorted to as sea-bathing quarters in the summer season; and many invalids are induced, by the mildness of the climate, to reside there during winter.

There are several remains of druidical monuments on the

island, but the chief or most entire is at Langalchorid, in the parish of Kingarth. At Dunagoil, in this parish, there is a vitrified fort, and the remains of an old church and burying-ground, where, until after the reformation, the two sexes were not allowed to intermingle. Near this church there is a circular inclosure called the Devil's Cauldron, where penance was wont to be performed. As this rite of superstition is somewhat singular, we shall describe it. Transgressors were imprisoned in this terrene purgatory for a given time, which, it may be readily conceived, was meted out according to the magnitude of the offences committed, being sometimes for several days and nights together. The priest threatened eternal punishment to the whole party if but one of their number fell asleep. To provide against this, the penitents were furnished with a sharp instrument, with which they kept pricking each other when inclined to somnolency.

There are three small villages in the island; Port Bannatync, situated at the head of Kames Bay, about two and a half miles from Rothesay; Kerrycroy, near Mountstuart, the seat of the Marquis of Bute; and Kilcatten Bay, situated on the south side of the island. The natives formerly spoke the English and Gaelic languages indifferently, but English is now chiefly spoken.

Arran is situated about eight miles south of Bute. It is very mountainous. Goatfield, a mountain situated about the centre of the island, is 2945 feet high; and some others approach to that height. There is a remarkably fine view from this mountain on all sides, whence is seen part of the Atlantic Ocean, Ireland, the counties of Ayr, Renfrew, Argyle, and Bute, the Frith of Clyde, Loch Fine, and hundreds of other scenes both grand and picturesque. There are many druidical remains and monumental stones on the island. Fingal's Cave is still pointed out; and tradition says Ossian died on this island. It is about twenty miles long and eleven broad, and contains about 106,000 English acres, 15,000 of which only are arable. Abundance of game and some wild deer are found on the mountains. These are either bare rocks, or only covered with heath and fern. There is comparatively little wood in the island, except near Brodick Castle. The climate in winter is very severe, and generally moist. The whole island, except a few farms, belongs to the Duke of Hamilton, in which family it has been for several centuries. The roads are for the most part very good, having been chiefly made by the parliamentary commissioners a few years ago; and the expense of repairs is defrayed partly by the exchequer, and partly by the proprietors, in terms of the act 59 Geo. III. cap. 135. The herring fishery is prosecuted to a considerable extent, but this is almost wholly done by means of wherries and other small vessels. There are two excellent harbours in the island, Lamlash and Loch Ranza, but without piers of any extent. There is a small pier at Brodick, but the bay is not well sheltered for anchorage. A very extensive pier was commenced at Lamlash in the reign of Queen Anne, and a considerable part erected, but it was afterwards neglected; and all the stones above the water have from time to time been removed for building or other purposes, so that now the foundation can scarcely be traced; and the only landing place is a small jetty recently built. The island produces barley, bear, oats, peas, beans, potatoes, and turnips. The islanders have been long addicted to illicit distillation, a practice which has not yet been given up, although it has considerably diminished, owing, it is believed, to the strong laws enacted against it, and the firmness with which they are executed. The smugglers give a better price for the barley and bear than could otherwise be obtained, and this enables the tenants to pay a better rent. We see no reason why this demoralizing traffic should not be as effectually

Buteshire. ally put a stop to here as it has been in the Isle of Bute, by the exertions of the principal proprietor. From the prevalence of this practice, the inhabitants of Arran have acquired a very reserved and suspicious manner, especially in the presence of strangers. A visitor to Arran will be sometimes amazed to find, that in putting a question about any individual or place in the island, to any of the natives, no satisfactory answer will be returned, until he, in his turn, undergo a process of examination as to his purpose in landing, and his objects in asking for these persons and places; and, from the same cause, it is very difficult to discover the perpetrator of any crime, unless it be of very considerable magnitude. Agriculture was much neglected till of late; every farm being occupied by a society of tenants, among whom the arable part of the farm was divided in small lots, and the pasturage grounds and moors were a common under one herd; but they are now well subdivided. There has been a great emigration from this island to America of late years, although the inhabitants are strongly attached to their native soil. The language chiefly spoken by the natives is Gaelic, but they are rapidly advancing in the knowledge of English. The islanders are all Protestants, and strongly attached to the church of Scotland. Christianity is said to have been introduced here by St Molios, a disciple of St Columba. The island is divided into two parishes, and has also two chapels. The largest parish is named Kilmory, and contains 3771 inhabitants; the other parish is named Kilbride, and contains 2656 inhabitants, making the population of the island 6427, besides a few seamen belonging to registered vessels. The population of this island has rather decreased of late years, owing to emigration. Arran is highly celebrated for its mineralogy. (See Jameson's *Mineralogy of the Scottish Isles*, Headrich's *Survey of Arran*, and Dr McCulloch's works.) Granite, rock crystal, quartz, and small-grained granite, are abundant in the northern division of the island. Mica slate and granite unite at Catacoal. Gneiss, micaceous schistus, and puddingstone, are abundant at Glenrosa. Quartz is found in all kinds of crystallization, in beds of clay slate and in other situations. Greenstone, sandstone resting on clay slate, basalt, trap, and limestone, are abundant. Pitchstone is found on the south, with pearlstone, ironstone, and porphyry; also flint, agate, siliceous spar, jasper, and various beautiful crystals.

Great Cumbrae is situated in the Frith of Clyde, betwixt Ayrshire and the island of Bute. It is the property of the Marquis of Bute and the Earl of Glasgow. It is about two miles and a half long, and one and a half broad, and measures about 2500 acres, one half of which is arable. It has a gentle ascent of about 400 feet from the sea to the centre of the island. The village of Millport is situated on the south-west side of the island, opposite which there is very safe anchorage-ground, and a small harbour is formed with a stone pier. The island abounds with lime and freestone. Considerable quantities of the freestone are exported, but the lime is seldom wrought. There are two basaltic rocks on the east side of the island, called Reppel Walls. It forms one parish, and has one church. The population in 1831 was 877, besides thirty-five seamen belonging to registered vessels.

Little Cumbrae lies about half a mile south of Great Cumbrae. It is the property of the Earl of Eglintoun. It is about a mile in length, and half a mile in breadth. Rabbits are very plentiful on this island. A light-house was erected in 1750 on the highest point of the island, but it was found that the fogs obscured the light; it was therefore removed to a lower situation. Three or four families live on it. The ruins of a castle are situated on the south side. The ascent from the shore is over rocks, which rise

one above another like steps of stairs. There are several Buteshire caves in the island, two of them very large. The extent of one of these is not known, but the other is thirty-two feet square, and six feet in height.

Inchmarnoch is a low-lying, small, beautiful island, situated about a mile west from Bute. It takes its name from a chapel built on it, dedicated to St Marnoch, and which had a burying-ground attached. The ruins were visible till very lately, when they were removed by the rude hands of a farmer. It is about a mile long and half a mile broad, and is divided into three farms, and nearly one half is arable. It is the property of the Marquis of Bute, and abounds in sea shell or marl. The inhabitants acknowledge the spiritual jurisdiction of the parish of Rothesay, although it was long considered as belonging to Saddle in Argyleshire, from the monks of St Marnoch being attached to the convent of Saddle; and still the minister of Kcrry derives a portion of his stipend from this island.

Pladda is a small island, which lies about a mile south-east from Arran, on which there is a light-house, which directs the mariner to the Cumbrae light.

Lamlash is a small island situated in the mouth of Lamlash Bay, in Arran, and helps to form that safe and capacious harbour.

The valued rent of the county in Scots money is L.15,042. 13s. 10d. The lands belong to twelve proprietors. The valuation Scots of the Marquis of Bute's land is L.8066. 5s. 4d.; that of the Duke of Hamilton, including a few farms belonging to Miss Ann Hamilton, is L.4955. 11s. Nearly one fourth of the lands in the county is entailed. The real rent of the lands in 1811 was L.18,560. 9s. 2d., of the houses L.2310. 1s. 7d. Of the thirty-three shires of Scotland, Bute was the twelfth in point of precedency in the Scottish parliament rolls and all public processions, though not entitled to that rank in point of valuation. It sent two members to parliament before the union; since that time, and till the passing of the reform bill, Bute and Caithness returned a member alternately; now Bute returns a member for itself. The family of Bute were hereditary sheriffs of the county for upwards of 360 years, until the jurisdictions were taken away in 1748. They were also lords of the regality of Bute. The present marquis is lord-lieutenant and high sheriff of the shire, and heritable coroner of the island of Bute, and keeper of the castle of Rothesay. Criminals usually tried before the justiciary court are sent to the circuit court at Inverary. Buteshire sends ten assizers to that circuit court. The islands of Bute and Cumbrae were granted by the sovereign of Scotland, at an early period, to the lord high steward; and when they fell under the power of Norway, the monarch of that country gave Bute and certain other islands to Reginald, king of Man. After the marriage of Alexander VI., lord high steward, with Jean, daughter and heiress of Angus, one of the grandsons of the king of Man, the islands of Bute, Arran, and Cumbrae became a favoured part of the patrimony of the lord high steward, between whom and the people a strong attachment subsisted; and they were, by way of distinction, called the Lord High Steward's Brandanes. It is probable that this name was derived from St Brandane, who flourished in the eleventh century. Sir John Stewart of Bute, from whom the family of Bute descended, was son to King Robert II., and received from his father the office of heritable sheriff, as well as an estate of lands in Bute and Arran. In the year 1544 the English burned the greater part of Bute and Arran. The shire of Bute contains 154 English square miles, or 98,547 English acres; and the population in 1831 amounted to 14,134, besides seamen belonging to registered vessels, of whom there might be about 400.

Butler.

BUTLER, CHARLES, a native of Wycomb, in the county of Bucks, and a master of arts in Magdalen College, Oxford, who published a book entitled "The Principles of Music in singing and setting; with the twofold use thereof, ecclesiastical and civil." 4to, London, 1636. The author of this book was a person of singular learning and ingenuity, which he manifested in sundry other works enumerated by Wood in the *Athenæ Oxonienses*. Among these is an English Grammar, published in 1633, in which he proposes a scheme of regular orthography, and makes use of characters, some borrowed from the Saxon, and others of his own invention, which it is impossible to represent by means of ordinary types; and of this imagined improvement he appears to have been so fond, that all his tracts are printed in the same manner as his grammar; the consequence of which has been an almost general disgust at every thing he has written. His treatise on the Principles of Music is, however, a very learned, curious, and entertaining book; and, by the help of the advertisement from the printer to the reader, prefixed to it, explaining the powers of the several characters made use of by him, may be read to great advantage, and may also be considered as a judicious supplement to Morley's introduction.

BUTLER, Samuel, a celebrated poet, was the son of a respectable Worcestershire farmer, and was born in 1612. He passed some time at Cambridge, but was never matriculated in that university. Returning to his native country, he lived some years as clerk to a justice of peace, and found sufficient time to apply himself to history, poetry, and painting. Being recommended to Elizabeth, countess of Kent, he enjoyed in her house not only the use of all kinds of books, but the conversation of the illustrious Selden, who often employed Butler to write letters, and translate for him. He lived also some time with Sir Samuel Luke, a gentleman of an ancient family in Bedfordshire, and a famous commander under Oliver Cromwell; and he is supposed at this time to have written, or at least to have planned, his celebrated *Hudibras*, and under that character to have ridiculed the knight. The poem itself furnishes this key in the first canto, where Hudibras says

'Tis sung, there is a valiant Mameluke
In foreign land yelep'd — — —
To whom we oft have been compar'd
For person, parts, address, and beard.

After the Restoration, Mr Butler was appointed secretary to the Earl of Carbury, lord president of Wales, who appointed him steward of Ludlow Castle when the court was revived there. No one proved a more generous friend to him than the Earl of Dorset and Middlesex, to whom it was owing that the court relished his *Hudibras*. He had promises of a good place from the Earl of Clarendon, but they were never accomplished; though the king was so much pleased with the poem as often to quote it pleasantly in conversation. It is indeed said that Charles ordered him the sum of L.3000; but the sum being expressed in figures, somebody through whose hands the order passed reduced it, by cutting off a cypher, to L.300, and though it passed the offices without fees, it proved not sufficient to pay what he then owed; so that Butler was not a shilling the better for the king's bounty. He died in 1680; and, though he met with many disappointments, he was never reduced to any thing like want, nor did he die in debt. Mr Granger observes, that Butler "stands without a rival in burlesque poetry. His *Hudibras*," he adds, "is in its kind almost as great an effort of genius as the *Paradise Lost* itself. It abounds with uncommon learning, new rhymes, and original thoughts. Its images are truly and naturally ridiculous. There are many strokes

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of temporary satire, and some characters and allusions which cannot be discovered at this distance of time."

BUTLER, Joseph, Bishop of Durham, a prelate distinguished by his piety and learning, as well as by the depth and originality of his metaphysical and ethical views, was the youngest son of Mr Thomas Butler, a respectable shopkeeper at Wantage, in Berkshire, where he was born in the year 1692. His father, who was a Presbyterian, observing that he had a strong inclination to learning, sent him from a grammar-school where he had been placed, to an academy in Gloucestershire, in order to qualify him for a dissenting minister; and while there he wrote some remarks on Dr Clarke's first sermon at Boyle's lecture. Afterwards, resolving to conform to the established church, he studied at Oriel College, where he contracted an intimate friendship with Mr Edward Talbot, son of the Bishop of Durham, and brother to the lord chancellor, who laid the foundation of his subsequent advancement. Soon after his admission into the university he took orders, and in 1718 he was appointed preacher at the Rolls Chapel. He held this situation for about eight years, when he published a volume of sermons delivered in that chapel, which elevated him to great reputation as a profound and original thinker. The Bishop of Durham bestowed upon him the rectory of Houghton, and afterwards that of Stanhope, where he resided a considerable time, entirely devoted to the duties of his pastoral functions. Through the recommendation of his friend and fellow-student Secker, afterwards Archbishop of Canterbury, he was in 1733 nominated chaplain to the Lord Chancellor Talbot; and a prebend in the church of Rochester followed this appointment. He now took the degree of LL.D., and in 1736 was appointed clerk of the closet to the queen, whom he attended every day by her majesty's special command, from seven till nine in the evening. In the same year he published his celebrated work *The Analogy of Religion, Natural and Revealed, to the Constitution and Course of Nature*, which is allowed to be the most original and profound work in any language on the philosophy of religion, and has accordingly placed the author in the first rank of deep and comprehensive thinkers. In 1738 Dr Butler was promoted to the bishopric of Bristol, on the recommendation of Queen Caroline, who had a philosophical taste, and highly esteemed this distinguished philosopher. Two years afterwards he was made Dean of St Paul's, when he resigned the living of Stanhope. In the year 1746 he was appointed clerk of the closet to the king, and in 1750 he obtained his highest preferment, the bishopric of Durham. This rich benefice he, however, enjoyed but a short time; for he died at Bath on the 16th of June 1752. His corpse was interred in the cathedral at Bristol, where there is a monument, with an inscription, erected to his memory. Dr Butler died a bachelor. His profound and comprehensive mind appears sufficiently in his *Sermons* at the Rolls Chapel, and in his celebrated work on the *Analogy of Religion*. An account of his character as a philosopher has been drawn with great ability and discrimination by Sir James Mackintosh, in his *Dissertation on the Progress of Ethical Philosophy*, prefixed to this work. See vol. i. p. 343.

BUTLER, the name anciently given to an officer in the court of France, being the same as the grand echanson or great cupbearer of later times.

BUTLER, in the common acceptance of the word, is an officer in the houses of princes and great men, whose principal business is to look after the wine, plate, and other similar articles.

BUTT is used for a measure of wine, containing two hogsheads, or 126 gallons, and is otherwise called *pipe*. A butt of currants is from 1500 to 2200 pounds weight.

Butler
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Butt.

Butts
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Button.

BUTTS, or *Butt-ends*, in the sea language, are the fore ends of all planks under water, as they rise, and are joined one end to another. Butt-ends in large ships are most carefully bolted; for if any one of them were to spring or give way, the leak would be very dangerous and difficult to stop.

BUTTS, the place where archers meet, with their bows and arrows, to shoot at a mark, which is called shooting at the *butts*.

BUTTER, a fat, unctuous substance, prepared from milk by beating or churning. It was late ere the Greeks appear to have had any notion of butter; their poets make no mention of it, and yet speak frequently of milk and cheese. The Romans used butter as a medicine, never as food. According to Beckman, the invention of butter belongs neither to the Greeks nor to the Romans. The former, he thinks, derived their knowledge of butter from the Scythians, the Thracians, and Phrygians; and the latter from the people of Germany. The ancient Christians of Egypt burnt butter in their lamps instead of oil; and in the Roman churches it was anciently allowed, during Christmas time, to burn butter instead of oil, on account of the great consumption of the latter at that season.

BUTTERFLY. See *ENTOMOLOGY, Index*.

BUTTERIS, in the manège, an instrument of steel, fitted to a wooden handle, wherewith to pare the foot or cut off the hoof of a horse.

BUTTOCK of a *Ship*, is that part which forms her breadth right astern, from the tack upwards; and a ship is said to have a broad or a narrow buttock, according as she is built broad or narrow at the transom.

BUTTSTED, a city, the chief of the bailiwick of the same name, containing 11,200 inhabitants, in the duchy of Saxe-Weimar. It stands on the river Lossa, and contains 1921 inhabitants, engaged in woollen manufactures.

BUTTON, an article in dress, the form and use of which are too well known to need description.

Metal BUTTONS. The metal with which the moulds are intended to be covered is first cast into small ingots, and then flatted into thin plates or leaves, of the thickness intended, at the flattening mills; after which it is cut into small round pieces proportional to the size of the mould they are intended to cover, by means of proper punches, on a block of wood covered with a thick plate of lead. Each piece of metal thus cut out of the plate is reduced into the form of a button by beating it successively in several cavities, or concave moulds, of a spherical form, with a convex puncheon of iron, always beginning with the shallowest cavity of the mould, and proceeding to the deeper, till the plate has acquired the intended form; and the better to manage so thin a plate, ten, twelve, and sometimes even twenty-four, are formed to the cavities, or concave moulds, at once; often nealing the metal during the operation, to make it more ductile. This plate is generally called by workmen the *cop of the button*.

The form being thus given to the plates or caps, the intended impression is struck on the convex side, by means of a similar iron puncheon, in a kind of mould engraven *en creux*, either by the hammer or the press used in coining. The cavity or mould in which the impression is to be made is of a diameter and depth suitable to the sort of button intended to be struck in it; each kind requiring a particular mould. Between the puncheon and the plate is placed a thin piece of lead, called by workmen a *hob*, which greatly contributes to take off all the strokes of the engraving; the lead, by reason of its softness, easily giving way to the parts which have relief, and as easily insinuating itself into the traces or indentures.

The plate thus prepared makes the cap or shell of the button. The lower part is formed of another plate, in the

same manner, but much flatter, and without any impression. To the last or under plate is soldered a small eye, made of wire, by which the button is to be fastened.

The two plates being thus finished, they are soldered together with soft solder, and then turned in a lathe. Generally indeed they use a wooden mould instead of the under plate; and in order to fasten it, they pass a thread or gut across through the middle of the mould, and fill the cavity between the mould and the cap with cement, in order to render the button firm and solid; for the cement entering all the cavities formed by the relief of the other side, sustains it, prevents its flattening, and preserves its bosse or design.

BUTTON'S BAY, the name of the northern part of Hudson's Bay, in North America, by which Sir Thomas Button attempted to find out a north-west passage to the East Indies. It lies between long. 80° and 100° west, and between lat. 60° and 66° north.

BUTTOOL, a small district of Hindustan, in the northern extremity of the province of Oude, ceded to the British by the treaty concluded in 1801 with the nabob of Oude. On the north it is separated by hills and forests from the territories of the Goorkhali rajah of Nepaul.

BUTTRESS, a kind of abutment built archwise, or a mass of stone or brick, serving to prop or support the sides of a building or wall on the outside, where it is either very high, or has any considerable load to sustain on the other side, as a bank of earth, or the like. Buttresses are used against the angles of steeples and other buildings of stone, on the outside and along the walls of such buildings as have great and heavy roofs, which would be subject to thrust out the walls, unless very thick, if no buttresses were placed against them. They are also placed for a support and abutment against the feet of some arches that are turned across great halls in old palaces, abbeys, and the like.

BUTZOW, a city in the grand duchy of Mecklenburg Schwerin. It is situated near a lake on the river Warnow, and is the seat of a provincial judicature. The inhabitants amount to 2964, who are employed mostly in linen manufactures.

BUXTEHUDE, a small city in the province of Bremen, and kingdom of Hanover. It is situated on the river Este, is walled, and contains about 1700 inhabitants, who find employment in making soap, leather, snuff, hosiery, and some baize.

BUXAR, a town of Hindustan, in the province of Bahar, district of Shahabad, situated on the south bank of the Ganges. The fort, which, though of small size, commands the Ganges, is now dismantled. At this place every boat navigating the river, as well as every land traveller, is obliged to stop and produce a pass; and the police is very strict. This place is distinguished by a celebrated victory gained here in 1764 by the British forces under Major, afterwards Sir Hector Munro, over the united armies of Sujah ud Dowlah and Cossim Ali Khan. Travelling distance from Benares seventy miles; from Calcutta by Moorshedabad 485, and by Birboom 408 miles. Long. 83. 58. E. Lat. 25. 35. N.

BUXTON, JEDEDIAH, a prodigy of skill in numbers. His father, William Buxton, was schoolmaster of the same parish where he was born in 1704; yet Jedediah's education was so much neglected, that he was never taught to write; and with respect to any other knowledge but that of numbers, he seemed always as ignorant as a boy of ten years of age. How he came first to know the relative proportions of numbers, and their progressive denominations, he did not remember; but to this he applied the whole force of his mind, and upon this his attention was constantly fixed; so that he frequently took no cognizance of external objects, and when he did, it was only with reference

Button
Bay
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Buxton

Buxton, to their numbers. If any space of time was mentioned, he would soon afterwards say it was so many minutes; and if any distance of way, he would assign the number of hair-breadths, without any question being asked, or any calculation expected, by the company. When he once understood a question, he began to work with amazing facility, after his own method, without the use of pen, pencil, or chalk, or even understanding the common rules of arithmetic as taught in the schools. He would stride over a piece of land or a field, and tell you the contents of it almost as exactly as if you had measured it by the chain. In this manner he measured the whole lordship of Elmtun, consisting of some thousand acres, belonging to Sir John Rhodes, and brought him the contents, not only in acres, roods, and perches, but even in square inches. After this, for his own amusement, he reduced them into square hair-breadths, computing forty-eight to each side of the inch. His memory was so great, that while resolving a question, he could leave off, and resume the operation again, where he had left off, the next morning, or at the distance of a week, a month, or several months, and proceed regularly till it was completed. His memory would doubtless have been equally retentive with respect to other objects, if he had attended to them with equal diligence; but his perpetual application to figures prevented the smallest acquisition of any other knowledge. He was sometimes asked, on his return from church, whether he remembered the text, or any part of the sermon; but it never appeared that he had brought away one sentence, his mind, upon a closer examination, being found to have been busied, even during divine service, in his favourite operation, either dividing some time, or some space, into the smallest known parts, or resolving some question that had been given him as a test of his abilities. In the year 1754 he came to London, where he was introduced to the Royal Society, who, in order to prove his abilities, asked him several questions in arithmetic; and he gave them such satisfaction, that they dismissed him with a handsome gratuity. In this visit to the metropolis, the only object of his curiosity, except figures, was his desire to see the king and royal family; but they being just removed to Kensington, Jedediah was disappointed. During his residence in London, he was taken to see King Richard III. performed at Drury-lane theatre; and it was expected, either that the novelty and the splendour of the show would have fixed him in astonishment, and kept his imagination in a continual hurry; or that his passions would, in some degree, have been touched by the power of action, even if he had not perfectly understood the dialogue. But Jedediah's mind was employed in the theatre just as it was employed in every other place. During the dance, he fixed his attention upon the number of steps; after a fine piece of music, he declared that the innumerable sounds produced by the instruments had perplexed him beyond measure; and he attended even to Mr Garrick, only to count the words that he uttered, in which he said he perfectly succeeded. Jedediah returned to the place of his birth, where, if his enjoyments were few, his wishes did not seem to exceed them.

Buxton, a town in the hundred of High Peake, in the county of Derby, 160 miles from London. It is in a valley, surrounded by a barren, hilly district. Its medicinal waters have great celebrity, and, with the excellent accommodation at the hotels and lodging-houses, and the salubrity of the air, attract a great number of visitors in the summer months. One of the most beautiful objects of Buxton is a range of buildings called the Crescent, constructed by the late Duke of Devonshire, and containing hotels, shops, and libraries. The inhabitants amounted in 1801 to 760, in 1811 to 934, in 1821 to 1036, and in 1831 to 1211.

Buxtorf, **John**, a learned professor of Hebrew at Basel, who, in the seventeenth century, acquired the highest reputation for his knowledge of the Hebrew and Chaldee languages. He died of the plague at Basel in 1629, aged sixty-five. His principal works are, 1. A small but excellent Hebrew Grammar, the best edition of which is that of Leyden in 1701, revised by Leusden; 2. A treasure of the Hebrew Grammar; 3. A Hebrew Concordance, and several Hebrew Lexicons; 4. *Institutio epistolæ Hebraica*; 5. *De Abbreviaturis Hebræorum*, &c.

Buxtorf, **John**, the son of the former, and a learned professor of the oriental languages at Basel, distinguished himself, like his father, by his knowledge of the Hebrew language, and his rabbinical learning. He died at Basel in 1664, aged sixty-five years. His principal works are, 1. His translation of the *More Nevochim* and the *Cozzi*; 2. A Chaldee and Syriac Lexicon; 3. An Anti-critique against Cappel; 4. A treatise on the Hebrew Points and Accents, against the same Cappel.

BUYING, the act of making a purchase, or of acquiring the property of a thing for a certain price.

Buying the Refusal is giving money for the right or liberty of purchasing a thing at a fixed price in a certain time to come, and is chiefly used in dealing for shares in stock. This is sometimes also called by a cant name, *buying the bear*.

Buying the Small Pox, is an appellation given to a method of procuring that disease by an operation similar to inoculation. It was performed either by rubbing some of the *pus* taken out of a pustule of a variolous person on the skin, or by making a puncture in the skin with a pin dipped in such *pus*.

BUZOT, a town of the province of Valencia, in Spain, about ten miles from Alicante, in a most romantic situation. It is celebrated for its warm baths, and for the kermes collected from the *quercus coccifera*.

BUZZARD. See **ORNITHOLOGY**, *Index*.

BYNG, **George**, Lord Viscount Torrington, was the son of John Byng, Esq. and was born in 1663. At the age of fifteen he went to sea as a volunteer with the king's warrant. His early engagement in this course of life gave him little opportunity of acquiring learning or cultivating the polite arts; but by his abilities and activity as a naval commander, he furnished abundant matter for the pens of others. After being several times advanced, he was in 1702 raised to the command of the Nassau, a third rate, and was at the taking and burning of the French fleet at Vigo; and the next year he was made rear-admiral of the red. In 1704 he served in the grand fleet sent to the Mediterranean under Sir Cloudsley Shovel as rear-admiral of the red; and it was he who commanded the squadron which attacked, cannonaded, and reduced Gibraltar. He was in the battle of Malaga, which followed soon afterwards; and for his behaviour in that action Queen Anne conferred on him the honour of knighthood. In 1705, in about two months time, he took twelve of the enemy's largest privateers, with the *Thetis*, a French frigate of forty-four guns; and also several merchant ships, most of them richly laden. The number of men taken on board was two thousand and seventy, and of guns three hundred and thirty-four. In 1718 he was made admiral and commander-in-chief of the fleet, and was sent with a squadron into the Mediterranean for the protection of Italy, according to the obligation England was under by treaty, against the invasion of the Spaniards, who had the year before surprised Sardinia, and had this year landed an army in Sicily. In this expedition he dispatched Captain Walton in the *Canterbury*, with five more ships, in pursuit of six Spanish men-of-war, with galleys, fire-ships, bomb-vessels, and store-ships, which had separated from the main fleet,

Buxtorf
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and stood in for the Sicilian shore. The captain's laconic epistle on this occasion, which is dated Canterbury, off Syracuse, 16th August 1718, is worthy of notice, as showing that his talent, like the admiral's, consisted in fighting, not in writing. "Sir,—We have taken and destroyed all the Spanish ships and vessels which were upon the coast, as per margin. I am, &c. G. WALTON." From the account referred to, it appeared that he had taken four Spanish men-of-war, with a bomb-vessel and a ship laden with arms; and burned four, with a fire-ship and bomb-vessel. The king made the admiral a handsome present, and sent him full powers to negotiate with the princes and states of Italy, as there should be occasion. He procured the emperor's troops free access into the fortresses which still held out in Sicily, sailed afterwards to Malta, and brought out the Sicilian galleys, and a ship belonging to the Turkey company. Soon afterwards he received a gracious letter from the Emperor Charles VI. written with his own hand, accompanied with a picture of his imperial majesty, set round with large diamonds, as a mark of the grateful sense the emperor entertained of his services. It was entirely owing to his advice and assistance that the Germans retook the city of Messina in 1719, and destroyed the ships which lay in the basin; an achievement which completed the ruin of the naval power of Spain. The Spaniards being much distressed, offered to quit Sicily; but the admiral declared that the troops should never be suffered to depart from the island till the king of Spain had acceded to the quadruple alliance. And to his conduct it was entirely owing that Sicily was subdued, and his Catholic majesty forced to accept the terms prescribed him by the quadruple alliance. After performing so many signal services, the king received him with the most gracious expressions of favour and satisfaction, and made him rear-admiral of England and treasurer of the navy, one of his most honourable privy-council, Baron Byng of Southill in the county of Bedford, Viscount Torrington in Devonshire, and one of the knights companions of the bath upon the revival of that order. In 1727 George II., on his accession to the crown, placed him at the head of naval affairs, as first lord of the admiralty; in which high station he died on the 15th January 1733, in the seventieth year of his age, and was buried at Southill, in Bedfordshire.

BYNG, *the Honourable George*, the unhappy son of the former, was bred to the sea, and rose to the rank of admiral of the blue. He gave many proofs of courage; but was at last shot, upon a questionable sentence, for neglect of duty in 1757. See BRITAIN.

BYROM, JOHN, an ingenious poet of Manchester, born in 1691. His first poetical essay appeared in the Spectator, No. 603, beginning, "My time, O ye Muses, was happily spent;" which, with two humorous letters on dreams, are to be found in the eighth volume. He was admitted a member of the Royal Society in 1724; and having originally entertained thoughts of practising physic, to which the title of doctor is incident, that was the appellation by which he was always known; but reducing himself to narrow circumstances by a precipitate marriage, he supported himself by teaching a new method of writing shorthand, of his own invention, until an estate devolved to him by the death of an elder brother. He was a man of lively wit; of which, whenever a favourable opportunity tempted him to indulge it, he gave many humorous specimens. He died in 1763; and a collection of his miscellaneous poems was printed at Manchester, in 2 vols. 8vo, 1773.

BYRON, LORD GEORGE GORDON, the only son of Captain Byron, and Catharine, sole child and heiress of George Gordon, Esq. of Gight, in Scotland, was born on the 22d

January 1788, in Holles Street, London. His father, a man of dissolute and extravagant habits, died in 1791, at Valenciennes, leaving his widow, who was then residing at Aberdeen, to support herself and her son on a pittance of £135 per annum. In 1794 his cousin, the grandson of the fifth Lord Byron, died in Corsica, and he became the presumptive heir to the peerage. The fifth Lord Byron died in 1798, and he succeeded to the title; and in the autumn of that year removed with his mother from Aberdeen to Newstead Abbey, in Nottinghamshire, which since the reign of Henry VIII. had been in the possession of the ancient family of Byron. Lord Byron had received the first rudiments of education at a grammar-school in Aberdeen. He was next sent in 1799 to the school of Dr Glennie at Dulwich, and in 1801 to Harrow, which he quitted in 1805. He is described by the head master of the latter school, the Rev. Dr Drury, as sensitive in disposition, intractable except by gentle means, shy, defectively educated, and ill prepared for a public school; but exhibiting the germs of considerable talent, though it does not appear to have been then foreseen in what mode his talents would display themselves. He excelled in declamation; and oratory, rather than poetry, was thought to be the prevailing bent of his genius. He seems to have been an active and spirited boy, at first unpopular, but finally a favourite; ardent in his school friendships, and jealous of the attachment of those whom he preferred. Among these the most learned were Lords Clare and Delawarr, the Duke of Dorset, Mr Harness, and Mr Wingfield. He was on friendly but less intimate terms with the most distinguished of his school-fellows, the present Sir Robert Peel. In classical scholarship Lord Byron acknowledged himself very inferior to Peel; but he was thought superior to him and to most others in general information. This was indeed extensive to a very unusual degree; and he has left on record an almost incredible list of works, in many various departments of literature, which he had read before the age of fifteen.

In October 1805 he was removed to Trinity College, Cambridge. He slighted the university, neglected its studies, and rebelled against its authority. Meanwhile he had commenced his poetical career, but at first feebly and with faint promise of future excellence. He first attempted poetry as early as 1800, under the inspiration of a boyish attachment to his young cousin, a daughter of Admiral Parker. In November 1806 he caused to be printed by Ridge, a bookseller at Norwich, for private circulation, a small volume of poems, among which one, written at the age of fifteen, is remarkable as containing a presage of his future fame. Some of the poems in this collection were of too licentious a character; and, on the advice of Mr Becker, a gentleman to whom the first copy had been presented, it was with praiseworthy promptitude suppressed, and replaced by a purified edition. In 1807 appeared his first published work, *The Hours of Idleness*; a collection of poems little worthy of his talent, and chiefly remembered through the castigation which it received from the *Edinburgh Review*. To this critique, which galled but did not depress him, we owe the first spirited outbreak of his talent, the satire entitled *English Bards and Scotch Reviewers*, which was published in March 1809. The length of this poem was increased, and many changes made in it, during its progress through the press. Censures of individuals were turned into praises, and praises into censures, with all the fickleness and precipitance of his age and character. It contained many harsh judgments, of which he afterwards repented; and able and vigorous as the satire was, and creditable to his talents, the time soon arrived when he was laudably anxious to suppress it. A few days previous to the publication of this

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satire, on the 17th of March 1809, he took his seat in the House of Lords. He seems on that occasion to have keenly felt the loneliness of his position. He was almost unknown to society at large; there was no peer to introduce him; and his mortification led him to receive with ungracious coldness the welcome of the lord chancellor. His unfriendly situation inspired him with disgust, and chilled his incipient longing for parliamentary distinction; and even a few days after taking his seat he retired to Newstead Abbey, and engaged with his friend Mr (now Sir J. C.) Hobhouse to travel together on the Continent. About the end of June the friends sailed together from Falmouth to Lisbon; travelled through part of Portugal and the south of Spain to Gibraltar; sailed thence to Malta and afterwards to Albania, in which country they landed on the 29th of September. From this time till the middle of the spring 1811, Lord Byron was engaged in visiting many parts of Greece, Turkey, and Asia Minor; staying long at Athens, Constantinople, and Smyrna. He touched again, on his return, at Malta, quitted it on the 2d of June, and early in July, after two years absence, landed in England. His affairs during this period had fallen into disorder, and it became advisable to sell either Rochdale or Newstead. The latter he was then most anxious to retain, and professed that it was his "only tie" to England, "and if he parted with that, he should remain abroad." In a letter to a friend, written during his homeward voyage, he thus expresses his melancholy sense of his condition: "Embarrassed in my private affairs, indifferent to public,—solitary without the wish to be social,—with a body a little enfeebled by a succession of fevers, but a spirit I trust yet unbroken,—I am returning home without a hope, and almost without a desire." This gloom was still deepened by numerous afflictions. His mother died on the 1st of August, without his having seen her again since his return to England; and he was deprived by death of five other relatives and friends between that and the end of August. "In the short space of one month," he says, "I have lost her who gave me being, and most of those who made that being tolerable." Amongst the latter were Wingfield, and Matthews, the brother of the author of the *Diary of an Invalid*. At this period of distress he was approaching unsuspectingly a remarkable epoch of his fame. He had composed while abroad two poems very different in character, and which he regarded with strangely misplaced feelings; the one called *Hints from Horace*, a weak imitation of his former satire; the other the first two cantos of *Childe Harold*. The former he intended to publish immediately; but the latter he thought of so disparagingly (owing probably to the injudicious comments of the single friend who had hitherto seen it), that it might probably have never become known to the public but for the wise advice of Mr Dallas. In compliance with the request of that gentleman, he withheld the *Hints from Horace*, which would have been injurious rather than beneficial to his fame, and allowed *Childe Harold* to be offered for publication. He received from his publisher, Mr Murray, £600 for the copyright, which he gave to Mr Dallas. The publication was long delayed; for though placed in the publisher's hands in August, it did not appear till the beginning of March 1812. It, however, received during this interval considerable improvements; and the fears of the author were allayed by the approbation of Mr Gifford, the translator of Juvenal, and then editor of the *Quarterly Review*. The success of the poem exceeded even the anticipation of this able critic; and Lord Byron emerged at once from a state of loneliness and neglect, unusual for one in his sphere of life, to be the magnet and idol of society. As he tersely says in his memoranda, "I awoke one morn-

ing and found myself famous." A few days before the publication of *Childe Harold*, he attracted attention, but in a minor degree, by his first speech in the House of Lords on the subject of the house-breaking bill. He opposed it, and with ability; and his first oratorical effort was much commended by Sheridan, Sir F. Burdett, and Lords Grenville and Holland. He had prepared himself, by having committed the whole of this speech to writing. It was well received, and he was extremely gratified by its success. He might perhaps have been incited by the praises it received to seek political distinction; but the greater success which attended his poem turned his ambitious feelings into a different channel. He nevertheless spoke again about six weeks afterwards, on a motion of Lord Donoughmore, in favour of the claims of the Roman Catholics, but less successfully than before. Less clearness was displayed in the matter of his speech, and his delivery was considered as theatrical. In the autumn of this year he wrote an address at the request of the Drury-lane Committee, to be spoken at the re-opening of the theatre; and not long afterwards he became a member of that committee. The same autumn he engaged to sell Newstead for £140,000, of which £60,000 was to remain in mortgage on the estate for three years; but this purchase was never completed. In May 1813 appeared his *Giaour*, a wildly poetical fragment, of which the story was founded on an event that had occurred at Athens while he was there, and in which he was personally concerned. It was written rapidly, and with such additions during the course of printing as to be more than trebled in length, and swelled from about four hundred lines to upwards of fourteen hundred. On the 2d of June in this year he spoke for the last time in the House of Lords, on presenting a petition from Major Cartwright. He had now apparently ceased to regard parliamentary distinction as a primary object of ambition.

In his journal of November 1813 is the following entry: "I have declined presenting the debtors' petition, being sick of parliamentary mummeries. I have spoken thrice, but I doubt my ever becoming an orator; my first was liked, my second and third, I don't know whether they succeeded or not; I have never set to it *con amore*." In November he had finished the *Bride of Abydos* (written in a week), and it was published the following month. The *Corsair*, a poem of still higher merit and popularity, appeared in less than three months afterwards: it was written in the astonishingly short space of ten days. During the year 1813 he appears to have first entertained a serious intention of marriage, and became a suitor to Miss Millbanke, only daughter and heiress of Sir Ralph Millbanke. His first proposal was rejected; but the parties continued on the footing of friendship, and maintained a correspondence, of which, and of that lady, he thus speaks, and it may be presumed with the most perfect sincerity, in his private journal: "Yesterday a very pretty letter from Annabella, which I answered. What an odd situation and friendship is ours! without one spark of love on either side, and produced by circumstances which in general lead to coldness on one side, and aversion on the other. She is a very superior woman, and very little spoiled, which is strange in an heiress—a girl of twenty—a peeress that is to be in her own right—an only child, and a *savante*, who has always had her own way. She is a poetess, a mathematician, a metaphysician, and yet withal very kind, generous, and gentle, with very little pretension: any other head would be turned with half her acquisitions and a tenth of her advantages." In September 1814 he made a second proposal by letter, which was accepted; and on the 2d of January 1815 he was married to Miss Millbanke, at Seaham, the country seat of her father. The only is-

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sue of this marriage, Augusta Ada, was born on the 10th of December of that year. We cannot lift the veil of their domestic life; we can only state the unfortunate results. On the 15th of January 1816, Lady Byron left London for Kirkby Mallory, the residence of her parents, whither Lord Byron was to follow her. She had, with the concurrence of some of Lord Byron's relatives, previously consulted Dr Baillie respecting the supposed insanity of her husband, and by the advice of that gentleman had written to him in a kind and soothing tone. Lady Byron's impressions of the insanity of Lord Byron were soon removed, but were followed by a resolution on her part to obtain a separation. Conformably with this resolution, Sir Ralph Millbanke wrote to Lord Byron on the 2d of February, proposing such a measure. This proposal Lord Byron at first rejected, but afterwards consented to sign a deed to that effect. Dr Lushington, the legal adviser of Lady Byron, has stated in a published letter, that he "considered reconciliation impossible." Of the circumstances which led to such an event, and on which Dr Lushington founded such an opinion, the public is at present uninformed. We are therefore, in absence of full and satisfactory evidence, bound to suspend our judgment on the merits of this melancholy case, and dismiss it with the foregoing statement of the leading facts. In the course of the spring he published the *Siege of Corinth* and *Parisina*. He also wrote two copies of verses, which appeared in the public papers, *Fare thee well*, and *A Sketch from Private Life*; of which his separation from his wife, and the instrumentality which he imputes to an humble individual in conducting to that separation, were the themes. This private circumstance had become the subject of general comment. The majority of those who filled the circles in which Lord Byron had lately lived declared against him, and society withdrew its countenance. Lord Byron, deeply stung by its verdict, hastily resolved to leave the country; and on the 25th of April 1816 he quitted England for the last time. His course was through Flanders and along the Rhine to Switzerland, where, at a villa called Deodati, in the neighbourhood of Geneva, he resided during the summer. From thence he made two excursions, one in the central part of Switzerland, in company with Mr Hobhouse, and another shorter excursion with a celebrated poetical compeer Mr Shelley, with whom he became acquainted soon after his arrival at Geneva. He remained in Switzerland till October, during which time he had composed some of his most powerful works; the third canto of *Childe Harold*, the *Prisoner of Chillon*, *Darkness*, the *Dream*, part of *Manfred*, and a few minor poems. In October he quitted Switzerland in company with Mr Hobhouse, and proceeded by Milan and Verona to Venice. Here he resided from the middle of November 1816 to the middle of April 1817. During this period his principal literary occupation was the completion of *Manfred*, of which he re-wrote the third act. He visited Rome for about a month in the spring, and then returned to Venice, at which city, or at La Mira, in its immediate vicinity, he resided almost uninterruptedly from this time till 1816. He wrote during this period the *Lament of Tasso*, *Beppo*, the fourth canto of *Childe Harold*, *Marino Faliero*, the *Foscari*, *Mazeppa*, and part of *Don Juan*. The licentious character of his life while at Venice corresponded but too well with the tone of that production. His able biographer and friend Mr Moore, after adverting to his *liaison* with a married Italian woman, says: "Highly censurable in point of morality and decorum as was his course of life while under the roof of Madame * * it was (with pain I am forced to confess) venial in comparison with the strange headlong career of license to which, when weaned from that connection, he so unre-

strainedly, and, it may be added, defyingly, abandoned himself." This course of unbridled libertinism received its first check from the growth of attachment which, as it was still unhallowed, not even the good which it may seem to have done in the substitution of a purer sentiment, will enable us to regard with satisfaction. In April 1819 he first became acquainted with the Countess Guiccioli, the young and newly-married wife of an elderly Italian nobleman. A mutual attachment, which appears to have commenced on the part of the lady, soon arose between Lord Byron and the Countess Guiccioli. Their passion was augmented by occasional separation, the interest excited by her severe illness during one of their forced absences, and the imprudent complaisance of the husband in leaving them much in the society of each other. They long lived together in a half-permitted state of intimacy, the lady appearing with the consent of her husband to share his protection with that of Lord Byron. But this equivocal position soon terminated in the separation of the Count and Countess Guiccioli. The lady then went to reside with her father; and under his sanction, during the next three or four years, she and Lord Byron enjoyed the intimate possession of each other's society. In December 1819 Lord Byron quitted Venice for Ravenna, where he remained till the end of October 1821. During this period he wrote part of *Don Juan*, the *Prophecy of Dante*, *Sardanapalus*, a translation of the first canto of *Pulci's Morgante Maggiore*, and the mysteries, *Heaven and Earth*, and *Cain*; the latter of which may be justly considered as among the most faulty in principle, and powerful in execution, of the productions of his genius. He also wrote a letter on Mr Bowles's strictures on Pope, dated 7th February 1821, in which he defends the poet against his commentator; and an answer to an article in Blackwood's Magazine, entitled "Remarks on Don Juan," but this was never published.

During this period an insurrectionary spirit broke out in Italy; the Carbonari appeared; and secret societies began to be formed. The brother of the Countess Guiccioli, Count Pietro Gamba, espoused the cause of the insurgents, and through his means Lord Byron became implicated in the proceedings of that party. In his private journal of 16th February 1821, Lord Byron complains of the conduct of that gentleman and others, in sending to his house, without apprising him, arms with which he had a short time previously furnished them at their request, and thereby endangering his safety, and exposing him to the vengeance of the government, which had lately issued a severe ordinance against all persons having arms concealed. In July 1821, the father and brother of Madame Guiccioli were ordered to quit Ravenna, and repaired with that lady, first to Florence, and afterwards to Pisa, where they were joined in October by Lord Byron. He remained at Pisa till September 1822, Madame Guiccioli still living with him under the sanction of her father, who, in consequence of one of the conditions of her separation from her husband, was always to reside with her under the same roof. While here he lost his illegitimate daughter Allegra, and his friend Shelley, who was drowned in July 1822 in the Bay of Spezia. The body was burned, and Lord Byron assisted at this singular rite. His principal associates during this time had been the Gambas, Shelley, Captain Medwyn, and Mr Trelawney. He had also become associated with the brothers John and Leigh Hunt, in a periodical paper called the *Liberal*; a transaction certainly disinterested, inasmuch as it does not appear that he expected either profit or fame to accrue to himself from the undertaking; and he seems to have allowed his name to be connected with it from a desire to serve the Hunts, of whom Leigh Hunt, with his wife and family,

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received an asylum in his house. An affray with a serjeant-major at Pisa rendered his residence in that city less agreeable; and his removal from it was at length determined by an order from the Tuscan government to the Gambas to quit the territory. Accordingly, in September 1822, he removed with them to Genoa. While at Pisa he had written, besides his contributions to the *Liberal*, *Werner*, the *Deformed Transformed*, and the remainder of *Don Juan*.

In April 1823 he commenced a correspondence with the Greek committee, through Messrs Blaquiére and Bowring, and began to interest himself warmly in the cause of the Greeks. In May he decided to go to Greece; and in July he sailed from Genoa in an English brig, taking with him Count Gamba, Mr Trelawney, Dr Burns, an Italian physician, and eight domestics; five horses, arms, ammunition, and medicine. The money which he had raised for this expedition was 50,000 crowns; 10,000 in specie, and the rest in bills of exchange. In August he arrived at Argostoli, the chief port of Cephalonia, in which island he established his residence till the end of December. His first feelings of exaggerated enthusiasm appear to have been soon cooled. Even as early as October he uses, in letters to Madame Guiccioli, such expressions as, "I was a fool to come here;" and, "of the Greeks I can't say much good hitherto; and I do not like to speak ill of them, though they do of one another." During the latter part of this year we find him endeavouring to compose the dissensions of the Greeks among themselves, and assisting them with a loan of £4000. About the end of December 1823 he sailed from Argostoli in a Greek mistico, and after narrowly escaping capture by a Turkish frigate, landed on the 5th of January 1824 at Missolonghi. His reception here was enthusiastic. The whole population came out to welcome him; salutes were fired; and he was met and conducted into the town by Prince Mavrocordato, and all the troops and dignitaries of the place. But the disorganization which reigned in this town soon depressed his spirits, which had been raised by this reception, and filled his mind with reasonable misgivings of the success of the Greek cause. Nevertheless his resolution did not seem to fail, nor did he relax in his devotion to that cause, and in his efforts to advance it. About the end of January 1824 he received his commission from the Greek government as commander of the expedition against Lepanto, with full powers both civil and military. He was to be assisted by a military council, with Bozzari at its head. Great difficulties attended the arrangement of this expedition, arising principally from the dissensions and jealousies of the native leaders, and the mutinous spirit of the Suliote troops; with which latter, on the 14th of February, Lord Byron came to a rupture, in consequence of their demand, that about a third part of their number should be raised from common soldiers to the rank of officers. Lord Byron was firm, and they submitted on the following day. Difficulties in the civil department harassed him at the same time, aggravated by a difference of opinion between himself and Colonel Stanhope, on the subject of a free press, which the latter was anxious to introduce, and for which, on the other hand, Lord Byron considered that Greece was not yet ripe. On the 15th of February, the day of the professed submission of the Suliotes, he was seized with a convulsive fit, and for many days was seriously ill. While he was on a sick bed, the mutinous Suliotes burst into his room, demanding what they called their rights; and though his firmness then controlled them, it soon afterwards became necessary to get rid of these lawless soldiers, by the bribe of a month's pay in advance,—and with their dismissal vanished the hopes of the expedition against Lepanto. After this he

turned his mind chiefly to the fortification of Missolonghi, the formation of a brigade, and the composition of the differences among the Greek chieftains. Since his attack in February he had never been entirely well. Early in April he caught a severe cold through exposure to rain. His fever increased, and in consequence of his prejudice against bleeding, that remedy was delayed till it was too late to be effectual. On the 17th (the second day after he had been bled) appearances of inflammation in the brain presented themselves. The following day he became insensible, and about twenty-four hours afterwards, at a quarter past six in the evening of the 19th of April 1824, Lord Byron breathed his last. Public honours were decreed to his memory by the authorities of Greece, where his loss was deeply lamented. The body was conveyed to England, and on the 16th of July was deposited in the family vault, in the parish church of Hucknall, near Newstead, in the county of Notts. By his will, dated 29th July 1815, Lord Byron bequeathed to his half-sister, Mrs Leigh, during her life, and after her death to her children, the monies arising from the sale of all such property, real and personal, as was not settled upon Lady Byron and his issue by her. The executors were Mr Hobhouse, and Mr Hanson, Lord Byron's solicitor.

The personal appearance of Lord Byron was prepossessing. His height was five feet eight and a half inches; his head small; his complexion pale; hair dark brown and curly; forehead high; features regular and good, and somewhat Grecian; eyes light grey, but capable of much expression. He was lame in the right foot, owing, it was said, to an accident at his birth; which circumstance seems always to have been to him a source of deep mortification, little warranted by its real importance. It did not prevent him from being active in his habits, and excelling in various manly exercises. He was a very good swimmer; successfully crossed the Hellespont in emulation of Leander; swam across the Tagus, a still greater feat; and, greatest of all, at Venice in 1818, from Lido to the opposite end of the grand canal, having been four hours and twenty minutes in the water without touching ground. In his younger days he was fond of sparring; and pistol-shooting, in which he excelled, was his favourite diversion while in Italy. In riding, for which he professed fondness, he did not equally excel. He was nervous both on horseback and in a carriage, though his conduct in Greece, and at other times, proved his unquestionable courage on great occasions. He had always a fondness for animals, and seemed to have preferred those which were of a ferocious kind. A bear, a wolf, and sundry bull-dogs, were at various times among his pets. The habits of his youth, after the period of boyhood, were not literary and intellectual; nor were his amusements of a refined or poetical character. He was always shy, and fond of solitude; but when in society, lively and animated, gentle, playful, and attractive in manner; and he possessed the power of quickly conciliating the friendship of those with whom he associated. He was very susceptible of attachment to women. The objects of his strongest passions appear to have been Miss Chaworth, afterwards Mrs Musters, and the Countess Guiccioli. His amours were numerous, and there was in his character a too evident proneness to libertinism. His constitution does not seem ever to have been strong, and his health was probably impaired by his modes of life. He was abstemious in eating, sometimes touching neither meat nor fish. Sometimes also he abstained entirely from wine or spirits, which at other times he drank to excess, seldom preserving a wholesome moderation and regularity of system. His temper was irascible, yet placable. He was quickly alive to tender and generous emotions, and performed many acts of disinterested liberality, even to-

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wards those whom he could not esteem, and in spite of parsimonious feelings, which latterly gained hold upon him. He was a man of a morbid acuteness of feeling, arising partly from original temperament, and partly from circumstances and habits. He had been ill educated; he had been severely tried; his early attachments, and his first literary efforts, had equally been unfortunate; he had encountered the extremes of neglect and admiration; pecuniary distresses, domestic afflictions, and the unnerving tendency of dissipated habits, had all conspired to aggravate the waywardness of his excitable disposition. It is evident that, in spite of his assumed indifference, he was always keenly alive to the applause and censure of the world; and its capricious treatment of him more than ordinarily encouraged that vanity and egotism which were conspicuous traits of his character.

The religious opinions of Lord Byron appear, by his own account of them, to have been "unfixed;" but he expressly disclaimed being one of those infidels who deny the Scriptures, and wish to remain "in unbelief." In politics he was liberal, but his opinions were much influenced by his feelings; and, though professedly a lover of free institutions, he could not withhold his admiration even from tyranny when his imagination was wrought upon by its grandeur. He would not view Napoleon as the enslaver of France; he viewed him only as the most extraordinary being of his age, and he sincerely deplored his fall.

Lord Byron's prose compositions were so inconsiderable that they may almost be overlooked in the view of his literary character. His letters nevertheless must not pass wholly unnoticed. Careless as they are, and hastily written, they are among the most lively, spirited, and pointed specimens of epistolary writing in our language, and would alone suffice to indicate the possession of superior talent. The critical theories of Lord Byron were remarkably at variance with his practice. The most brilliant supporter of a new school of poetry, he was the professed admirer of a school that was superseded. The most powerful and original poet of the nineteenth century, he was a timid critic of the eighteenth. In theory he preferred polish to originality or vigour. He evidently thought Pope the first of our poets; he defended the unities; praised Shakespeare grudgingly; saw little merit in Spencer; preferred his own *Hunts from Horace* to his *Childe Harold's Pilgrimage*; and assigned his eminent contemporaries Coleridge and Wordsworth a place far inferior to that which public opinion has more justly accorded to them.

The poetry of Lord Byron produced an immediate effect unparalleled in our literary annals. Of this influence much may be attributed, not only to the real power of his poetry, but also to the impressive identification of its principal characteristics with that which, whether truly or falsely, the world chose to regard as the character of the author. He seemed to have unbosomed himself to the public, and admitted them to view the full intensity of feelings which had never before been poured forth with such eloquent directness. His poems were as tales of the confessional, portraiture of real passion, not tamely feigned, but fresh and glowing from the breast of the writer. The emotions which he excelled in displaying were those of the most stormy character,—hate, scorn, rage, despair, indomitable pride, and the dark spirit of misanthropy. It was a narrow circle, but in that he stood without a rival.

His descriptive powers were eminently great. His works abound in splendid examples; among which the Venetian night-scene from Lioni's balcony, Terni, the Coliseum viewed by moonlight, and the shipwreck in Don Juan, will probably rise foremost in the memories of many readers. In description he was never too minute.

He selected happily, and sketched freely, rapidly, and boldly. He seized the most salient images, and brought them directly and forcibly to the eye at once. There was, however, in his descriptive talent, the same absence of versatility and variety which characterized other departments of his genius. His writings do not reflect nature in all its infinite change of climate, scenery, and season. He portrayed with surpassing truth and force only such objects as were adapted to the sombre colouring of his pencil. The mountain, the cataract, the glacier, the ruin,—objects inspiring awe and melancholy,—seemed more congenial to his poetical disposition than those which led to joy or gratitude.

His genius was not dramatic; vigorously as he portrayed emotions, he was not successful in drawing characters; he was not master of variety; all his most prominent personages are strictly resolvable into one. There were diversities, but they were diversities of age, clime, and circumstances, not of character. They were merely such as would have appeared in the same individual when placed in different situations. Even the lively and the serious moods belonged alike to that one being; but there was a bitter recklessness in the mirth of his lively personages, which seems only the temporary relaxation of that proud misanthropic gloom that is exhibited in his serious heroes; and each might easily become the other. It may also be objected to many of his personages, that, if tried by the standard of nature, they were essentially false. They were sublime monstrosities;—strange combinations of virtue and vice, such as had never really existed. In his representations of corsairs and renegades, he exaggerates the good feelings which may, by a faint possibility, belong to such characters, and suppresses the brutality and faithlessness which would more probably be found in them, and from which it is not possible that they should have been wholly exempt. His plan was highly conducive to poetical effect; but its incorrectness must not be overlooked in an estimate of his delineation of human character. In his tragedies there is much vigour; but their finest passages are either soliloquies or descriptions, and their highest beauties are seldom strictly of a dramatic nature. Many of his dialogues are scarcely more than interrupted soliloquies; many of his arguments such as one mind would hold with itself. In fact, in his characters, there was seldom that degree of variety and contrast which is requisite for dramatic effect. The opposition was rather that of situation than of sentiment; and we feel that the interlocutors, if transposed, might still have uttered the same things.

It is to be deplored that scarcely any moral good is derivable from the splendid poetry of Lord Byron. The tendency of his works is to shake our confidence in virtue, and to diminish our abhorrence of vice;—to palliate crime, and to unsettle our notions of right and wrong. Even many of the virtuous sentiments which occur in his writings are assigned to characters so worthless, or placed in such close juxtaposition with vicious sentiments, as to induce a belief that there exists no real definable boundary; and it may perhaps be said with truth, that it would have been better for the cause of morality, if even those virtuous sentiments had been omitted. Our sympathy is frequently solicited in the behalf of crime. Alp, Conrad, Juan, Parisina, Hugo, Lara, and Manfred, may be cited as examples. They are all interesting and vicious. In the powerful drama of *Cain*, the heroes are Lucifer and the first murderer; and the former is depicted, not like the Satan of Milton, who believes and trembles, but as the compassionate friend of mankind. Resistance to the will of the Creator is represented as dignified and commendable; obedience and faith as mean, slavish, and con-

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temptible. It is implied that it was unmerciful to have created us such as we are, and that we owe the Supreme Being neither gratitude nor duty. Such sentiments are clearly deducible from this drama. Whether they were those of Lord Byron is not certain; but he must be held accountable for their promulgation. (Y. Y.)

BYRON'S *Island*, in the Pacific Ocean, discovered by Commodore Byron in the year 1765. It is about twelve miles in length, and is low, flat, and full of woods, in which the cocoa tree is predominant. It is inhabited by savages. Long. 173. 16. E. Lat. 1. 18. S.

BYSSUS, or Byssum, a fine thready matter produced in India, Egypt, and the vicinity of Elis in Achaia, of which the richest apparel was anciently made, especially that worn by the priests, both Jewish and Egyptian. Some interpreters render the Greek *βυσσος*, which occurs both in the Old and New Testament, by *fine linen*. But other versions, as Calvin's, and the Spanish one printed at Venice in 1556, explain the word by *silk*; and yet byssus must have been different from our silk, as appears from a multitude of ancient writers, and particularly from Julius Pollux. M. Simon, who renders the word by fine linen, adds a note to explain it, bearing "that there was a fine kind of linen very dear, which the great lords alone wore in this country as well as in Egypt;" an account which agrees perfectly well with that given by Hesychius, as well as with the observation of Bochart, that the byssus was a finer kind of linen, which was frequently dyed of a purple colour. Some authors will have the byssus to be the same with our cotton; others take it for the *linum asbestinum*; and a third class conceive it to have been the lock or bunch of silky hair found adhering to the pinna marina, by which the latter fastens itself to neighbouring bodies. Authors usually distinguish two sorts of byssus; that of Elis, and that of Judæa, which was the finest. Of this latter the priestly ornaments were made. Bonfrerius remarks, that there must have been two sorts of byssus, one finer than ordinary, by reason there are two Hebrew words used in Scripture to denote byssus; one of which is always used in speaking of the habit of the priests, and the other in alluding to that of the Levites.

BYZANTIUM, an ancient city of Thrace, situated on the Bosphorus. It was founded, according to Eusebius, about the thirtieth Olympiad, when Tullus Hostilius reigned in Rome. But, according to Diodorus Siculus, the foundations of this metropolis were laid in the time of the Argonauts, by one Bysas, who then reigned in the neighbouring country, and from whom the city was called *Byzantium*. This Bysas, according to Eustathius, arrived in Thrace a little before the Argonauts came into those seas, and settled there with a colony of Megarenses. But Velleius Paterculus ascribes the founding of Byzantium to the Milesians, while Ammianus Marcellinus attributes it to the inhabitants of Attica. Some ancient medals of Byzantium, however, bear the name and head of Bysas, with the prow of a ship on the obverse. The year after the destruction of Jerusalem by Titus, Byzantium was reduced into the form of a Roman province. In A. D. 193 the city took part with Niger against Severus, and was strongly garrisoned by Niger, as being a place of the utmost importance. But it was soon afterwards invested by Severus; and as he was universally hated on account of his cruelty, the inhabitants defended themselves with the greatest resolution. Having been supplied with a great number of warlike machines, most of them invented and built by Periscus, a native of Nicæa, and the greatest engineer of his age, they for a long time baffled all the attempts of the assailants, killed great numbers of them, crushed such as approached the walls with large stones; and when stones began to fail, they discharged the statues

of their gods and heroes as missiles against the enemy. But at last they were obliged to submit, through famine, after having been reduced to the necessity of devouring one another. The conqueror put all the magistrates and soldiers to the sword; but he spared the engineer Periscus. Before this siege Byzantium was the greatest, wealthiest, and most populous city of Thrace. It was surrounded by walls of an extraordinary height and breadth, defended by a great number of towers, seven of which were built with such art that the least noise heard in one of them was immediately conveyed to all the rest. Severus, however, no sooner became master of the place, than he commanded it to be laid in ashes. The inhabitants were stripped of all their effects, and publicly sold as slaves, whilst the walls were levelled with the ground. But from the chronicle of Alexandria we learn, that soon after this terrible catastrophe Severus himself caused a great part of the city to be rebuilt, calling it *Antonia*, after his son Caracalla, who assumed the surname of Antoninus. In A. D. 262, the tyrant Galienus wreaked his fury on the inhabitants of Byzantium. He intended to besiege it, but on his arrival despaired of being able to make himself master of so strong a place. He was, however, admitted next day into the city; and, without any regard to the terms agreed on, he caused the soldiers and all the inhabitants to be put to the sword. Trebellius Pollio says, that not a single person was left alive. What reason there was for such an extraordinary massacre we are nowhere informed. In the wars between the Emperors Licinius and Maximin the city of Byzantium was obliged to submit to the latter, but it was soon afterwards recovered by Licinius. In the year 323, it was taken from Licinius by Constantine the Great, who in 330 enlarged and beautified it, with a design to make it the second, if not the first city in the Roman empire. He began with extending the walls of the ancient city from sea to sea; and whilst some of the workmen were busied in rearing these defences, others were employed in raising within them a great number of stately buildings, amongst which was a palace nowise inferior in extent and magnificence to that of Rome. He built a capital and an amphitheatre, and constructed a circus maximus, several forums, porticoes, and public baths. He divided the whole city into fourteen regions or wards, and granted the inhabitants many privileges and immunities. By these means Byzantium became one of the most flourishing and populous cities of the empire. Vast numbers of people flocked thither from Pontus, Thrace, and Asia, as Constantine, by a law enacted A. D. 330, had decreed that no person who had lands in those countries should be at liberty to dispose of them, or even to leave them to his proper heir at his death, unless such heir had a house in the new city. But however desirous the emperor might be that his city should be filled with people, he did not care that it should be inhabited by any but Christians. He therefore caused the idols to be pulled down, and the temples to be consecrated to the true God. Besides, he built an incredible number of churches, and caused crosses to be erected in all the squares and public places. When most of the buildings were finished, he caused the city to be solemnly dedicated to the Virgin Mary, according to Cedrenus, but according to Eusebius, to the God of Martyrs. At the same time Byzantium was declared equal in rank to Rome; and similar rights, immunities, and privileges were granted to its inhabitants, with those enjoyed by the metropolis. Constantine established a senate and other magistracies, with power and authority equal to those of old Rome; and he took up his residence in the new city, changing its name to CONSTANTINOPLE.

BZOVIVS, ABRAHAM, one of the most celebrated wri-

Bzovius.

C
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Cabal.

ters in the seventeenth century, in as far as respects the number of pieces composed by him. His chief work is the continuation of Baronius's *Annals*. He was a native of Poland, and a Dominican friar. Upon his arrival at Rome he was received with open arms by the Pope, and

had an apartment assigned him in the Vatican. He merited that reception, for he has imitated Baronius to admiration, in his design of making all things conspire to enhance the power and glory of the papal see. He died in 1630, aged seventy.

Caball
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Caban.

C.

C, THE third letter, and second consonant, of the alphabet, is pronounced like *k* before the vowels *a*, *o*, and *u*, and like *s* before *e*, *i*, and *y*. C is formed, according to Scaliger, from the *z* of the Greeks, by retrenching the stem or upright line; though others derive it from the *z* of the Hebrews, which has in effect the same form; only, that as the Hebrews read towards the left, and the Latins and other western nations towards the right, each turned the letter their own way. However, the C not being the same as to sound with the Hebrew *caph*, *z*, and it being certain that the Romans did not borrow their letters immediately from the Hebrews or other orientals, but from the Greeks, the derivation from the Greek *z* is upon the whole the more probable. Indeed Montfaucon, in his *Palæographia*, gives some forms of the Greek *z* which approach very near to that of our C; and Suidas calls the C the Roman *kappa*. Before the first Punic war C held the place which is now occupied by G, as appears from the Duilian Column, where we meet with *acnam* for *agnam*, *lecionem* for *legionem*, and *exfociont* for *effugiant*. The second sound of C resembles that of the Greek *z*; and many instances occur of ancient inscriptions, in which *z* has the same form with our C. Grammarians are pretty generally agreed that the Romans pronounced their Q like our C, and their C like our K. Mabillon informs us that Charles the Great was the first who wrote his name with a C; whereas all his predecessors of the same name wrote it with a K; and the same difference is observable in their coins. As an abbreviation, C stands for Caius, Carolus, Cæsar, *condemno*, &c., and CC represent *consulibus*. As a numeral, C signifies 100, CC 200, and so on. C, in *Music*, placed after the cleff, intimates that the music is in common time, which is either quick or slow as it is joined with *allegro* or *adagio*; but if alone, it is usually *adagio*. If the C be crossed or turned, the first requires the air to be played quick, and the last very quick.

CAABA, or CAABAH, properly signifies a square stone building, but it is particularly applied by the Mahomedans to the temple at Mecca, built, as they pretend, by Abraham and his son Ishmael. This temple enjoys the privilege of an asylum for all sorts of criminals; but it is most remarkable for the pilgrimages made to it by the devout Moslems, who pay it so great a veneration that they account a single sight of its sacred walls, without any particular act of devotion, as meritorious in the sight of God, as the most careful discharge of one's duty, for the space of a whole year, in any other temple.

CAANA, or KAANA, a town in Upper Egypt, seated on the eastern bank of the river Nile, whence corn and pulse are carried for the supply of Mecca in Arabia. Here are several monuments of antiquity yet remaining, adorned with hieroglyphics. Long. 32. 23. E. Lat. 24. 30. N.

CAB, a Hebrew dry measure, being the sixth part of a seah or satum, and the eighteenth part of an ephah. A cab contained $2\frac{2}{3}$ pints of our old corn measure.

CABAL, a name aptly given to the infamous ministry

of Charles II. composed of five persons, Clifford, Ashley, Buckingham, Arlington, and Lauderdale, the first letters of whose names, in this order, furnished the appellation by which they were distinguished.

CABALLARIA, in middle-age writers, lands held by the tenure of furnishing a horseman with suitable equipage during war, or when the lord had occasion for him.

CABALLEROS, or CAVALLEROS, are Spanish wools, of which there is a pretty considerable trade at Bayonne in France, and other places.

CABALLINE denotes something belonging to horses. Thus caballine aloes is so called, from its being chiefly used for purging horses; and common brimstone is called *sulphur caballinum*, for a similar reason.

CABANIS, PETER JOHN GEORGE, a distinguished writer and physician at Paris, was born at Conac in 1757. His father, John Baptiste Cabanis, was a lawyer of eminence, and chief magistrate of a district in the Lower Limousin, highly respected for his extensive knowledge and inflexible integrity, and entitled to the gratitude of his country for the many improvements he has introduced in agriculture and farming. He brought the culture of the vine to great perfection in his province, and introduced a mixed breed of sheep, by crossing the Spanish with those of Limousin and Berri. France is more particularly indebted to him, however, for the successful methods he discovered of grafting fruit trees, and also for contributing to render more general the use of the potato in the southern provinces. He was exceedingly anxious that his son, the subject of the present article, and who had given early indications of talent, should have the advantage of a learned education; and he accordingly placed him, when only seven years old, under the tuition of a neighbouring priest. It was remarked that, even at this early age, he had acquired habits of steadiness and perseverance, from which, under proper direction, the best results might be expected. At the age of ten he entered the college of Brive, where the severity of discipline to which he was subjected had an injurious effect upon his temper, and fostered that habitual impatience of restraint which formed part of his character, and which afterwards so frequently operated to interrupt his progress. When raised to the second class, he was fortunate in meeting with a master whose kind treatment soon softened a disposition which harshness only had rendered stubborn and intractable. He was not only reconciled to study, but applied to it with the utmost diligence, and became passionately fond of the great models of poetry and eloquence which were put into his hands. At a later period, being again exposed to the rigorous control of one of the heads of the college, his spirit was once more roused; he came to the determination of provoking the anger of his master, and even suffered himself to be accused of a fault of which he was innocent, in the hope that he might get expelled. Persisting in this extraordinary mode of conduct, he soon accomplished his object, and was sent back to his father. But far from en-

Cabanis. joying any relaxation under the paternal roof, he now found himself under a subjection still more rigorous and insupportable than that from which he had managed to escape. Indignant at the yoke imposed upon him, he relapsed into his habits of obstinacy, and would do nothing. After a year had thus passed in sullenness, his father became sensible that other measures than those of severity must be tried, and adopted the bold expedient of taking him to Paris, and leaving him there, at the age of fourteen, without any restraint on his actions, or even commissioning any one to superintend his conduct. The experiment was hazardous in the extreme, but it was attended with complete success. Young Cabanis no sooner felt himself at full liberty to do as he pleased, than his love of literature revived, and he engaged with ardour in the pursuit. He had formerly paid no attention to the lectures of his professors; but he now, of his own accord, resumed those branches of his education in which he had remained deficient, and prosecuted them with the same perseverance which marked his character throughout. He devoted himself entirely to the cultivation of his mind, and associated only with a few chosen companions of his own age, who had a congenial taste for literature, and an equal desire of improvement.

Thus constantly occupied, two years passed away with a rapidity which astonished him, when he received a letter from his father, offering him the place of secretary to a Polish nobleman of high rank. He had now to choose between accepting a situation, which, although it would totally interrupt his present pursuits, might give him the power of resuming them at some future period, or returning to his family, where he felt that all his exertions must be paralysed, and his hopes blighted by neglect. He embraced, therefore, without hesitation, the offer made to him, and, though only sixteen, committed himself into the hands of strangers, in a distant country, which was represented to him as in a state of barbarism. This was in 1773, the year during which that diet was sitting which was to deliberate upon giving its sanction to the first partition of Poland. The corrupt intrigues and compulsory measures which were practised on that occasion gave him an insight into the affairs of the world peculiarly revolting to a youthful and generous mind, and inspired him with a contempt for mankind, and a degree of misanthropic gloom, which are generally the fruits of a later experience of human depravity. He returned to Paris two years afterwards, when Turgot, the friend of his father, was minister of finance. On being presented to this statesman, he was received with kindness, and would soon have been placed in a situation perfectly conformable to his tastes and wishes, had not a court intrigue produced the sudden downfall of the minister.

Thus the only fruits which he had gathered from his travels were the knowledge of the German language, and a premature acquaintance with the world. He now felt the necessity of making up for the time he had lost, and again applied to his studies with his former ardour. His father, feeling it incumbent upon him to second his efforts, secured to him the means of subsistence for two or three years longer, which was all that Cabanis desired. He had contracted a friendship with the poet Roucher, who possessed some celebrity. This connection rekindled his taste for poetry; and the French Academy having proposed as a prize subject the translation of a passage in the *Iliad*, he not only ventured to appear as competitor, but set about translating the entire poem. The two specimens which he sent to the Academy did not obtain any public notice, but they were judged of favourably by several persons of taste; and some other fragments that were published among the notes to the poem *Des Mois*, met

with general approbation. He received the approbation of those critics who were the dispensers of literary fame in Paris, and was introduced at once into a large circle of acquaintance, where he was everywhere greeted with acclamation. He was soon, however, sensible of the emptiness of these applauses; and, dissatisfied with successes that offered no prospect of solid advantage, he sunk into a state of melancholy, which, together with his excessive application to study, began visibly to prey upon his constitution. His father now urged him to choose a useful profession, and he at length decided for that of medicine, which, embracing such various objects of study, presented an ample field for the exertions of his active mind, while it necessitated that degree of bodily exercise which had become so necessary for the preservation of his health. Dubreuil, whose counsels had had much influence with him in forming this determination, offered to be his guide in the new and arduous career which he was commencing. Cabanis continued for six years the pupil of this able master, following his steps both in his hospital and private practice, and conducting his studies conformably to his instructions. In 1789 he published *Observations sur les Hôpitaux*, a work which procured him the appointment of administrator of hospitals at Paris.

His state of health, in the midst of his laborious professional exertions, requiring occasional relaxation in the country, he fixed upon Auteuil, in the immediate vicinity of Paris, as his place of residence. It was there that he became acquainted with the widow of Helvetius, and ever after cherished for that excellent woman the affection of a son, as she, on her part, fulfilled towards him the duties of the kindest mother. He spent all his leisure hours in her society, and profited by the opportunity her house afforded him of cultivating the acquaintance of the most distinguished literary men of that period. He continued his intercourse with Turgot; was on terms of intimacy with Condillac, Thomas, and D'Alembert; and acquired the friendship of Holbach, Franklin, and Jefferson. During the last visit which Voltaire made to Paris, Cabanis was presented to him by Turgot, and read to him part of his translation of the *Iliad*, which that acute critic, though old, infirm, and fatigued with his journey, listened to with great interest, and bestowed much commendation on the talents of the author. Cabanis had now, however, long ceased to occupy himself with that work; and, fully engaged with the studies and duties of his profession, had renounced the cultivation of letters. He even bade a formal adieu to poetry in his *Serment d'un Médecin*, which appeared in 1789, and is a free imitation of the Greek of Hippocrates, but is more remarkable as exhibiting the author in the light of a zealous friend to liberty. Political interests were now, indeed, beginning to engross the general attention; and the muses were deserted amidst the contentions of parties, the din of arms, and the various anxieties and passions which were called into play during this eventful period. Cabanis espoused with enthusiasm the cause of the revolution, to which he was attached from principle, and of which the opening prospects were so congenial to his active and ardent mind. But, however he may have shared in the intoxication which seized its early partizans, it is certain that he had no participation in the criminal excesses which followed, and which have left so indelible a stain upon the history of those times.

During the two last years of Mirabeau's life he was intimately connected with that extraordinary man, who had the singular art of pressing into his service the pens of all his literary friends, whom he engaged to furnish him with their ideas, in writing, on the political topics of the day, that he might afterwards combine them as he chose, and adopt them as his own. Cabanis united himself with this

Cabanis.

disinterested association of labourers, and contributed the *Travail sur l'Education Publique*; a tract which was found among the papers of Mirabeau at his death, and was edited by the real author soon afterwards in 1791. During the illness which terminated his life, Mirabeau confided himself entirely to the professional skill of Cabanis; and, though repeatedly and strongly urged, as his danger increased, to have further medical assistance, constantly refused to have recourse to any other advice. Of the progress of the malady, and the circumstances attending the death of Mirabeau, Cabanis has drawn up a very detailed narrative, which, whatever proof it may afford of the warmth of his friendship for his patient, is not calculated to impress us with any high idea of his skill in the treatment of an acute inflammatory disease.

Condorcet was another distinguished character with whom Cabanis was on terms of intimacy. The calamitous events of the revolution, and the relentless persecution which the former was suffering from the party which had gained the ascendancy, tended only to unite them still more closely in the ties of friendship; and Cabanis exerted every means in his power to avert his impending fate. But all his efforts were unavailing; and he had only the melancholy consolation of preserving the last writings of his unfortunate friend, and of collecting his dying wishes relative to his wife and children. Soon after this event he married Charlotte Grouchy, sister to Madame Condorcet and to General Grouchy, a union which was a great source of happiness to him during the remainder of his life.

After the subversion of the government of the terrorists, Cabanis, on the establishment of central schools, was named professor of *Hygiène*, in the medical schools of the metropolis. He was chosen member of the National Institute the next year, and on the following was appointed clinical professor. He was afterwards member of the Council of Five Hundred, and then of the Conservative Senate. The dissolution of the Directory was the result of a motion which he made to that effect. But his political career was not of long continuance. He was profoundly affected at the turn which the affairs of his country were taking, so unfavourable to the cause of liberty, and so dispiriting to the friends of humanity; and the latter years of his life were, in consequence, deeply tinged with melancholy. A foe to tyranny in every shape, he was decidedly hostile to the policy of Bonaparte, and had constantly rejected all his solicitations to accept of a place under his government.

For some years before his death, his health became gradually more impaired, in consequence of the exertions and anxieties he had undergone; and, in the spring of 1807, he had a slight apoplectic attack, from which he soon recovered. He, however, took the warning that was thus given him, and retired from the laborious duties of his profession, spending the greatest part of his time at the chateau of his father-in-law at Meulan, about thirty miles from Paris. Here he again solaced himself with reading his favourite poets, and even had it in contemplation to resume his translation of the *Iliad*, which had been the first effort of his youthful muse. The rest of his time was devoted to kindness and beneficence, especially towards the poor, who flocked from all parts to consult him on their complaints. Increasing infirmity now made him sensible that his life was drawing near to a close; and he was fond of conversing on the subject of his approaching end, an event which he always contemplated with perfect serenity of mind. A more complete attack of his disorder at length carried him off on the 5th of May 1808, when he had attained his fifty-second year. He left a widow and a daughter to lament the loss of one who united to the ornaments of a highly cultivated mind the greatest sensibility and benevolence of heart.

Besides the tracts already mentioned, he was author of several other works. The only one among them which is purely of a literary nature is the *Mélanges de Littérature Allemande, ou Choix de Traductions de l'Allemande*, &c. Paris, 8vo, 1797. It is dedicated to Madame Helvetius, and consists of translations of different works of Meisner, of a drama of Goëthe's entitled *Stella*, of Gray's *Elegy on a Country Church Yard*, and of the Idyl of Bion on the death of Adonis. His work *Du Degré de Certitude de la Médecine* appeared in the same year; and a second edition was published in 1803, containing a republication of his *Observations sur les Hôpitaux*, and his *Journal de la Maladie et de la Mort de Mirabeau l'aîné*; together with a short tract on the punishment of the guillotine, in which he combats the opinion of Soemmerring, Celsuer, and Sue, that sensibility remains for some time after decapitation. This tract had already appeared in the *Magazin Encyclopédique*, and in the first volume of the *Mémoires de la Société Médicale d'Emulation*. This new edition also contains his *Rapport fait au Conseil des Cinq-cents sur l'Organisation des Ecoles de Médecine*; and a long dissertation entitled *Quelques Principes et quelques Vues sur les Séjours Publics*. In 1799 he published *Quelques Considérations sur l'Organisation sociale en général, et particulièrement sur la nouvelle Constitution*, 12mo. His principal work, however, is that entitled *Des Rapports du Physique et du Morale de l'Homme*, 1803, in two volumes 8vo; consisting of twelve essays, the first six of which had been presented to the National Institute, and were inserted in the first two volumes of their *Memoirs*, in the class of moral and political sciences. This work was reprinted in the following year, with the addition of a copious analytical table of its contents by M. Destutt-Tracy, and alphabetical indexes by M. Sue. His *Coup d'Œil sur les Révolutions et les Réformes de la Médecine* came out in 1803. Of this work we possess an excellent English translation, with notes by Dr Henderson. His only practical work on medicine is the *Observations sur les Affections Catarrhales en général, et particulièrement sur celles connues sous le nom de Rhumes de Cerveau, et Rhumes de Poitrine*, 8vo, 1807. He wrote many interesting articles in the *Magazin Encyclopédique*. Several of his speeches to the legislative assembly are given at full length in the *Moniteur*. (v.)

CABBAGE. See HORTICULTURE.

CABBALA, according to the Hebrew style, has a very distinct signification from that in which we understand it in our language. The Hebrew cabbala signifies tradition; and the rabbin, who are called cabbalists, study principally the combination of particular words, letters, and numbers, by which means they pretend to discover what is to come, and to see clearly into the sense of many difficult passages of Scripture. There are no sure principles of this knowledge, which in fact depends upon some particular traditions of the ancients; for which reason it is termed *cabbala*. The cabbalists have abundance of names which they call *sacred*, and not only make use of in invoking spirits, but imagine that they derive great light from them. They tell us that the secrets of the cabbala were discovered to Moses on Mount Sinai; and that these have been delivered down to them from father to son without interruption, and without any use of letters; for to write them down is what they are by no means permitted to do. This is likewise termed the oral law, because it passed from father to son, in order to distinguish it from the written law. There is another cabbala, called *artificial*, which consists in searching for abstruse and mysterious significations of a word in Scripture, from which are borrowed certain explanations, by combining the letters which compose it. This cabbala is divided into three kinds, the gematric, the notaricon, and the themora or themura. The first, or ge-

Cabbalists matric, consists in taking the letters of a Hebrew word for ciphers or arithmetical numbers, and explaining every word by the arithmetical value of the letters of which it is composed; the second, called *notaricon*, consists in taking every particular letter of a word for an entire diction; and the third, called *themura*, or change, consists in making different transpositions or changes of letters, placing one for the other, or one before the other. Among the Christians, likewise, a certain sort of magic is, by mistake, called *cabbala*, and consists in using improperly certain passages of Scripture for magical operations, or in forming magical characters or figures with stars and talismans. Some visionaries among the Jews believe that Jesus Christ wrought his miracles by virtue of the ridiculous mysteries of the *cabbala*.

CABBALISTS, the Jewish doctors who profess the study of the *cabbala*. In the opinion of these men, there is not a word, letter, nor accent in the law, without some mystery in it. The Jews are divided into two general sects; the Karaites, who refuse to receive either tradition or the Talmud, or any thing but the pure texts of Scripture; and the Rabbinites, or Talmudists, who besides this receive the traditions of the ancients, and follow the Talmud. The latter are again divided into two other sects; pure rabbinites, who explain the Scripture in its natural sense, by grammar, history, and tradition; and cabbalists, who, to discover hidden and mystical senses, which they suppose God to have couched therein, make use of the *cabbala* and the mystical methods above mentioned.

CABECA, or **CABESS**, a name given to the finest silks in the East Indies, while those from fifteen to twenty per cent. inferior to them are called *barina*. The Indian workmen endeavour to pass them off one with the other; for which reason the more experienced European merchants take care to open the bales, and to examine all the skaines one after another. The Dutch distinguish two sorts of *cabeças*, namely, the moor *cabeça* and the common *cabeça*.

CABELLO, or **CAVELLO PORTO**, a sea-port of Venezuela, in South America, with an excellent harbour and bay. It is situated a league to the west of the harbour of Bonburata, and has become the centre of the commerce and navigation of the province of Venezuela. The bay is exceedingly commodious, safe, and well defended from the prevailing winds. The trade of Cabello is considerable, and principally carried on with the ports of the same continent and with the neighbouring colonies; but only a few vessels are employed in that trade with the mother country. Population 8000. Long. 10. 20. E. Lat. 34. N.

CABENDA, a great emporium on the western coast of Africa, situated a little to the north of the river Zaire, in the district of Caongo. From the remarkable beauty and fertility of its situation, it has been called the Paradise of the coast. The bay is very commodious for trade, wooding, and watering. Long. 12. 30. E. Lat. 5. 40. S.

CABEZA DE BUEY, a town in the Spanish province of Estremadura, with 3500 souls. There is carried on here a cloth manufactory, which employs 1666 workmen.

CABEZZO. See **ANGOLA**.

CABIDOS, or **CAVIDOS**, a long measure used at Goa, and other places of the East Indies belonging to the Portuguese, to measure stuffs, linens, and the like, and equal to four-sevenths of the Paris ell.

CABIN, a room or apartment in a ship, where any of the officers usually reside. There are many of these in a large ship, the principal of which is designed for the captain or commander. The apartments where the inferior officers or common sailors sleep and mess are usually called berths.

CABINET, the most retired place in the finest part of a building, set apart for writing, studying, or preserving any thing that is precious.

CABINET also denotes a piece of joiner's workmanship, being a kind of press or chest, with several doors and drawers. There are common cabinets of oak or of chestnut varnished, cabinets of China and Japan, cabinets of inlaid work, and cabinets of ebony, or other precious woods.

CABINET is also used in speaking of the more select and secret councils of princes. Thus, we say the secrets, the intrigues of the cabinet. To avoid the inconveniences of a numerous council, the policy of Italy and the practice of France first introduced cabinet councils.

CABINET-MAKING. See **JOINERY**.

CABIRI, a term in the theology of the ancient Pagans, signifying great and powerful gods, and being a name given to the gods of Samothracia. They were also worshipped in other parts of Greece, as Lemnos and Thebes, where the Cabiria were celebrated in honour of them. These gods are said to have been in number four, namely, Axieros, Axiocersa, Axiocersus, and Casmilus.

CABIRIA, festivals in honour of the Cabiri, celebrated in Thebes and Lemnos, but especially in Samothracia, an island consecrated to the Cabiri. All persons initiated in the mysteries of these gods were thought to be thereby secure against storms at sea, and all other dangers. The ceremony of initiation was performed by placing the candidate, crowned with olive branches, and girded about the loins with a purple riband, on a kind of throne, about which danced the priests and persons previously initiated.

CABLE, a thick, large, strong rope, commonly of hemp, which serves to keep a ship at anchor.

Cable is also applied to ropes which are used to raise heavy loads by the help of cranes, pulleys, and other engines. The name *cable* is usually given to such as are at least three inches in circumference; those which are less are only called *ropes*, of different names, according to their use. See **ROPE-MAKING**.

Sheet Anchor **CABLE** is the greatest cable belonging to a ship.

Stream **CABLE**, a hawser or rope, used to moor the ship in a river or haven sheltered from the wind and sea.

CABLE's Length, a measure of 120 fathoms, or of the usual length of the cable.

CABOT, **SEBASTIAN**, the celebrated navigator, and first discoverer of the American continent, was the son of John Cabot, a Venetian merchant, resident in England. Although the subject of much dispute for a long time, it is now placed beyond a doubt that England may confidently claim the honour of his birth. In an ancient collection of voyages and travels by Richard Eden, a learned writer and contemporary of Sebastian, the author, in a marginal note, says, "Sebastian Cabote told me, that he was borne in Bristowe (Bristol), and that at iiiij yeare ould he was carried with his father to Venice, and so returned agayne into England with his father after certayne years, whereby he was thought to have been born in Venice." (*Decades of the New World*, fol. 255.) It also appears that he returned, while still young (*pene infans*), to England, and remained there till he grew up to manhood.

From an unaccountable laxity in the scrutiny of writers, considerable misrepresentations relating to this extraordinary man have hitherto prevailed, and obtained general credence. These hypothetical statements, so long maintained, must now give place to facts, which the research of a modern writer has recently brought to light, and placed upon a basis of irrefragable veracity.¹

¹ See a *Memoir of Sebastian Cabot, with a Review of the History of Maritime Discovery, illustrated by documents from the Rolls, now first published*. 8vo. London, 1831.

Cabot.

The brilliant discoveries of Columbus, towards the close of the fourteenth century, awakened a spirit of enterprise throughout the enlightened nations of Europe; and England was not inattentive to movements, from which great and important advantages might result to her dominions. Her monarch, Henry VII., however avariciously inclined, evinced great readiness to facilitate and promote adventure in the novel career opened up to human ambition. The all-important and engrossing object was to discover a route to India; and an expedition in a north-westerly direction, ostensibly to reach what was called Cathay, or the Land of Spice, was speedily, after the discoveries of Columbus, projected by Sebastian Cabot, and fitted out under the auspices of the English government. The first patent, which bears date the 5th of March 1496 (Rymer, *Fœdera*, vol. xii. p. 595), was given to John Cabot, and his three sons, Lewis, Sebastian, and Saucius, and authorizes them "to seek out, discover, and find whatsoever isles, countries, regions, or provinces of the heathen and infidels, whatsoever they be, and in what part of the world soever they be, which before this time have been unknown to all Christians." The patentees were further empowered to set up the royal banner, and occupy and possess all the "newly found" lands in the name of the king, who reserved a fifth of the profits. It was also stipulated that the vessels should return to Bristol, and that the privilege of exclusive resort and traffic belonged to the patentees.

Although the patent was conferred on John Cabot and his three sons, there can be no doubt, even if the father did accompany the expedition, that its success was entirely owing to the genius of Sebastian. The inaccuracies which have arisen from the loose investigation and immature consideration of several ancient and modern writers, are now satisfactorily traced to certain perverted statements of Hakluyt; and their exposition, which we owe to the industry and acumen of the author of the *Memoir* alluded to, is worthy of attentive examination. Suffice it here to remark, that from a singular misinterpretation of some documents, and the omission of others, John Cabot, who was not the discoverer, but only a part owner of an expedition to discover new lands, erroneously got the credit, not only of his son Sebastian's discovery of the American continent, but also of possessing powers of mind and scientific knowledge which were scarcely inferior to those possessed by Columbus himself.

To Sebastian Cabot, therefore, belongs the undoubted glory of the first discovery of the *terra firma* of the Western World. The expedition, consisting of the ship commanded by Sebastian, and three or four smaller vessels, sailed from Bristol in the beginning of May 1497; and an ancient Bristol manuscript records the fact, that, "in the year 1497, the 24th June, on St John's day, was Newfoundland found, by Bristol men, in a ship called the *Mathew*." On the authority of Peter Martyr, we learn, that after quitting the north, where he reached latitude sixty-seven and a half, Cabot proceeded along the coast of the continent, to a latitude corresponding probably with that of the Straits of Gibraltar. Indeed he is said to have gone so far southward, "ut Cubam Insulam a læva longitudine graduum pene parcm habuerit." A failure of provisions at this point compelled him to desist from further pursuit, and the expedition returned to England.

The second patent, which for the first time has been published in the *Memoir* referred to, is dated 3d February 1498, and gives authority to "John Kabotto or his deputies," to take at pleasure six English ships, and "them convey and lede to the londe and isles of late found." Shortly after the date of this patent John Cabot died; and it is said that his sons Lewis and Saucius went to settle in Italy. Sebastian, however, did not abandon

an enterprise in which he had embarked; and a second voyage was zealously undertaken under his superintendence. A ship equipped at the king's expense, along with four small vessels, sailed from Bristol in the spring of the year 1498. It is curious, that although, both from the language of the patent, and the circumstance of three hundred men embarking, colonization seems to have been contemplated, the leading object of the voyage was to effect the discovery of a north-west passage. The result is unfortunately wrapt in much obscurity. Gomara alone furnishes us with what may be a correct account. According to this author, Cabot "directed his course by the tracte of islande, uppon the Cape of Labrador, at lviii. degrees; affirmynge that, in the monethe of July, there was such could, and heapes of ise, that he durst passe no further; also, that the dayes were very longe, and in maner without nyght, and the nyghtes very clear. Certayne it is, that at the lx. degrees, the longest day is of xviii. houres. But consyderynge the coulde, and the straungeness of the unknowne lande, he turned his course from thense to the west, folowynge the coast of the lande of Baccalaos unto the xxxviii. degrees, from whence he returned to Eng-lande." (Eden's *Decades*, fol. 318.)

The results of this second voyage were not sufficiently important to induce Henry to equip another expedition. We have good authority for believing, however, that Cabot, in 1499, "with no extraordinary preparations sett forth from Bristoll, and made greate discoveries." (Seyer's *Memoirs of Bristol*.) This is confirmed by the navigator Hojeda having, in his first voyage, found "certain Englishmen" in the neighbourhood of Caquibacoa. It is highly probable, from the unlikelihood of any other English seamen pursuing such a route, that these were Cabot and his companions. But the narrative of Cabot's life for the fifteen years subsequent to the departure of his second expedition is meagre and unsatisfactory. One circumstance deserves notice, that during that period Amerigo Vespucci, in company with Hojeda, crossed the Atlantic for the first time, whilst Sebastian was prosecuting his third voyage; yet, as the author of his memoirs says, "while the name of the one overspreads the new world, no bay, cape, or headland, recalls the memory of the other."

After the death of Henry VII., upon the invitation of Ferdinand, Sebastian Cabot went to Spain; and Vespucci, who held the office of pilot-major, having died, he was appointed his successor. He was soon employed in a general revision of maps and charts; and his public and private character endeared him to most of the learned and good men in Spain. He had, however, like Columbus, many enemies; and the death of Ferdinand put an end to an expedition then in contemplation. The ignoble commencement of the reign of Charles V. frustrated all further hopes of its prosecution; and Cabot in disgust returned to England, where, under Henry VIII. he got honourable employment, and performed another westwardly voyage in 1517, which, however, from various causes, proved unsuccessful.

In 1518 we find our navigator in Spain, and again reinstated in the appointment of pilot-major. The dispute between Spain and Portugal in regard to their respective rights to the Moluccas having been decided at the congress of Badajos in 1524 in favour of Spain, a company was formed at Seville to open a commercial intercourse with these islands; and Cabot, with the title of Captain-general, set sail, after many delays, with a fleet in April 1526. The squadron was ill assorted, and a mutiny broke out, the consequences of which diverted his course from the Moluccas to the mouth of the Rio de la Plata, up which he penetrated about three hundred and fifty leagues. He erected a fort at St Salvador; and afterwards sailing up

Cabra
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Cabul.

the Parana, he built other two forts. He subsequently entered the Paraguay, where he was drawn into a sanguinary contest with the natives. From the report then made by him to Charles V. it is probable, had he been supplied with means and ammunition, he would have made the conquest of Peru, which Pizarro afterwards accomplished with his own private resources. After tarrying in the hopes of receiving supplies, Cabot was forced to return to Spain, where he resumed his functions of pilot-major.

He finally settled in England, where he appears to have exercised a general supervision over the maritime concerns of the country, and enjoyed a pension of two hundred and fifty merks. It was then that he disclosed to Edward VI. his discovery of the phenomenon of the variation of the needle;—a discovery for which alone his name deserves to be immortalized. It was also at his instigation that the important expedition was undertaken which resulted in the opening of the trade with Russia; and in the charter of the company of merchant adventurers he was nominated governor for life, as “the chiefest setter forth” of the enterprise. Cabot lived to a very advanced age, and died probably in London; but neither the date of his death nor the place of his interment is properly authenticated.

Sebastian Cabot may be justly regarded as one of the most illustrious navigators the world has ever seen. His life exhibits one continued devotion to the mighty impulses of his genius. England owes him a debt of imperishable gratitude. “He ended,” says the author of the *Memoir* which has rescued so much of his life from obscurity, “he ended, as he had begun, his career in the service of his native country, infusing into her marine a spirit of lofty enterprise, a high moral tone, a system of mild but inflexible discipline, of which the results were not long after so conspicuously displayed. Finally, he is seen to open new sources of commerce, of which the influence may be distinctly traced on her present greatness and prosperity.”

(z. z.)

CABRA, a town of Central Africa, situated on the Niger, and serving as a port to Timbuctoo, from which it is about twelve miles distant. It is represented as consisting of one long row of about 1200 houses along the river; the ground is wet and marshy. The people are entirely employed in trade.

CABRERA, an island belonging to Spain, in the Mediterranean Sea, to the south of Majorca. There is a castle, and a presidio to which delinquents are transported, and kept to hard labour, from the neighbouring ports of the peninsula. It is provided with excellent springs of water, and the harbour is of great capacity, and has good anchorage, with from fifteen to twenty fathoms of water, so that the largest ships of war can enter. The centre of the island is in long. 3. 31. 26. E. and lat. 39. 7. 30. N.

CABUL, or **CAUBUL**, a province of Afghanistan, which sometimes gives its name to the whole kingdom, with which its limits are frequently confounded. It is estimated to extend 250 miles in length by 150 in average breadth. It is situated between the 33d and 35th degrees of north lat. and is bounded on the north by Kuttore or Caffristan, on the east by Peshawer or the Indus, on the south by Ghizni and Candahar, and on the west by Hazareh. The country is divided into two parts by a ridge of very high mountains, which run from east to west, and are covered with snow the greater part of the year, whilst the valleys are scorched with excessive heat; the country contains, besides, hills of moderate height, and extensive plains and forests. But from the Indus to the city of Cabul there is a great scarcity of wood, and a want of fuel in the winter season for the poorer classes. Near Baramow is a sandy uninhabited valley, twenty miles in length; the tract lying to the north of the dividing ridge of mountains is named

Lumghanat, that to the south Bungishshat. There are valleys, each intersected in its whole length by one or more considerable streams running through it. The valley of Cabul lies between the Hindoo Coosh Mountains on the north and the Soliman ridge on the south, and is in many places about twenty-five miles in breadth. Towards the east the valley is occupied by hills of inferior elevation, that connect the mountainous ridges. West of these hills is the town of Jellalabad, and farther west the country still rises. The river Cabul runs through the centre of this province, which is principally occupied by pastoral tribes, who constantly live in tents, migrating periodically with the seasons; during the summer months occupying the mountains, and in winter returning to the valleys. These vagrant tribes attend little to agriculture, and it is in the vicinity of the towns only that the country is well cultivated. The chief towns are Cabul, Peshawer, Ghizni, Jellalabad, &c. A considerable trade is carried on by the inhabitants of the towns. To Cabul resort merchants from the most distant countries. A number of horses are brought here from Tartary, which are exported to Hindustan; also furs and hides, which are exchanged for the indigo and other productions of Hindustan. To Candahar are exported iron, leather, and lamp-oil, whence the returns are made in the manufactures of Persia and Europe.

CABUL, a very ancient city, and at present the capital of Afghanistan, surrounded by a brick wall about a mile and a half in circumference, with towers at the angles, and scarcely any ditch. It stands on the eastern side of two united hills of a semicircular form, in the midst of an extensive and fertile plain, well watered, and interspersed with walled villages. A stream runs through the town, and has a small bridge over it. Through the plain runs the Cabul river, over which, at the distance of four or five miles to the southward of the city, is a bridge of brick. The houses are built of rough stones and clay, and make but a mean appearance. Four spacious bazars were erected here in the centre of the city, by Ali Murdan Khan, a celebrated Persian nobleman, who for many years governed these western provinces. These are now occupied by the meanest order of mechanics, and the fountains with which they were supplied are choked up with filth. The citadel, called Bala-Hissar, or Upper Fort, is situated on a rising ground in the eastern quarter of the city, and it contains the palace and other public buildings. The climate, from the vicinity of the great central range of the Hindoo Coosh Mountains, covered with perpetual snow, inclines to cold, and is liable also to sudden variations. Cabul is a great resort of trade, and the great bazar is frequently crowded with Usbeck Tartars, and with Hindoos from Peshawer. This city is mentioned by the Arabian historians in the seventh century as the residence of a Hindoo prince. It was for some time the capital of the Emperor Baber, and in the year 1739 was taken by Nadir Shah, who, after abandoning it to plunder, annexed it, along with the province, to his Persian dominions. On his death Ahmed Shah Abdally took possession of it, and in the year 1774 it was constituted the capital of Afghanistan by his son Timour Shah. The travelling distance from Delhi is 839 miles, from Agra 976, from Lucknow 1118, and from Calcutta 1815 miles.

CABYNA, a small island in the Eastern Seas, about twenty-one miles in length by fifteen in breadth, lying due south of the eastern extremity of Celebes. Long. 121. 53. E. Lat. 5. 18. S.

CACAVONE, a town of Italy, in the Neapolitan province of Molese, with 2247 inhabitants.

CACCAMO, a city in the intendency of Palermo, in the island of Sicily. It is situated on the shore, and contains 6420 inhabitants.

Cabul
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Caccamo.

Caceres
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Cachar.

CACERES, a town of Spain, in the province of Estremadura. It is situated on the left bank of the Tagus, between Alcantara and Truxillo, and principally known from giving its name to a particular kind of Merino wool, of a second or third rate fineness. It contains 8000 inhabitants, and has twenty-six tanneries, which employ sixty-two workmen, and complete 16,680 pieces; it has also three potteries, seven rope-walks, and four dyeing houses.

CACHALONG, a name given by mineralogists to a peculiar variety of calcadony. It is commonly of a milk-white colour, and translucent, occurring imbedded in the trap rocks of Iceland and Faro, along with calcadony. It is met with also on the borders of the river Cach in Bukharia; whence its designation.

CACHAO, **KACHO**, **KECHO**, or **BACKHINC**, the capital of the kingdom of Tonquin, in Asia, situated on the west side of the river Songkoi, about eighty miles from the sea. It is of great extent, and has neither walls nor fortifications, being merely surrounded by a bamboo hedge. The principal streets are wide and airy, and for the most part are paved with bricks and small stones; intermediate spaces being, however, left for the passage of elephants and other beasts of burden. The other streets are narrow and ill paved. Many of the houses are built with brick, though the larger proportion are constructed of mud and timber, and thatched with leaves, straw, or reeds, which exposes them to the danger of fires; and they are not above one story in height. The magazines and warehouses belonging to foreigners are the only edifices built of brick; and these, though plain, yet, by reason of their height and more elegant structure, make a considerable show among the rows of wooden huts. The public edifices are very spacious, but particularly the royal palace, which is several miles in circuit, and is surrounded by high walls. It contains many buildings within its precincts, which are devoted to different purposes, and embellished with a variety of carvings and gildings after the Indian manner, all finely varnished. In the outer court are sumptuous stables for the king's horses and elephants. It was extremely difficult to procure access to the inner courts during the residence of the sovereigns of Tonquin, who have for some years past transferred their abode to a city in Cochin China. Besides this palace there are to be seen the ruins of one still more magnificent, which is said to have been six miles in circumference. Cachao is a great commercial resort, and its trade is facilitated by the river, which is always crowded with vessels. The imports are long cloths, chintz, arms, pepper, and other articles, in exchange for which gold is given; and manufactured goods, namely, beautiful silks, and lackered ware, which is generally reckoned superior to any in the East. The English factory, which stood on the banks of the river, north of the city, and that of the Dutch, south of it, have long been withdrawn. On the opposite side of the Songkoi is the Campey, a town of the Chinese. Cachao, built chiefly of wooden and brick houses, is peculiarly liable to fires; and to prevent these, or to extinguish them after they have broken out, the city is governed by a very rigid police, and is divided into wards, each subjected to a certain jurisdiction. Fires for domestic use are only permitted some hours during the day. About the middle of the eighteenth century the city was nearly burnt to the ground by a conflagration, which was the work of incendiaries, who discharged fire-arrows during the night against the straw-covered roofs, and the whole was in a moment in a blaze. The accounts of the population vary extremely. By some of the missionaries it is reckoned equal to that of Paris. Later authors compute it at 40,000. Long. 105. 15. E. Lat. 22. 36. N.

CACHAR, a district in Asia, tributary to the Burman

empire, and lying about the twenty-fifth degree of north latitude, between that country and Bengal. It is a mountainous and sterile country, bounded on the north by Assam, on the south by the Cassay country, on the east by Cassay, and on the west by the districts of Tipperah and Silhet in the province of Bengal. It is of a large though uncertain extent. The country is naturally fertile, but greatly overgrown with jungle, and thinly inhabited. The natives are Hindoos of the Khutzi tribe, and are said to be very pusillanimous. It was invaded by a Burman army in 1774, but the troops were attacked by the hill fever, and died in such numbers that they were obliged to retreat, and were finally cut off in detail by the natives. A second expedition in 1776 was more successful; and the rajah of Cachar was obliged to do homage to the Burman sovereign. The British formerly maintained an intercourse with this country, but since it has fallen under the Burman yoke this intercourse has been stopt.

CACHUNDE, the name of a medicine, highly celebrated among the Chinese and Indians, and composed of several aromatic ingredients, perfumes, medicinal earth, and precious stones. They make the whole into a stiff paste, and, according to their fancy, form out of it several figures, which are dried for use; these are principally used in the East Indies, but are sometimes brought over to Portugal. In China the principal persons usually carry a small piece in their mouths, which is a continued cordial, and gives their breath a very sweet smell.

CACOPHONIA, in *Grammar* and *Rhetoric*, the meeting of two letters or syllables which yield an uncouth and disagreeable sound. The word is compounded of *κακός*, bad, and *φωνή*, voice.

CACUS, in fabulous history, an Italian shepherd upon Mount Aventine. As Hercules was driving home the herd of King Geryon, whom he had slain, Cacus robbed him of some of his oxen, which he drew backward into his den lest they should be discovered. Hercules at last finding them out by their lowing, or the robbery being otherwise discovered to him, killed Cacus with his club. He was Vulcan's son, of prodigious bulk, and half man half satyr.

CADALEN, a market-town of the department of the Tarn, in France, on the river Candou, with 1404 inhabitants.

CADARI, or **KADARI**, a sect of Mahomedans, who assert free will, attribute the actions of men to men alone, not to any secret power determining the will, and deny all absolute decrees, and predestination. The author of this sect was Mabe ben Kaled al Gihoni, who suffered martyrdom for his doctrine. The word comes from the Arabic, *cadara*, power. Ben Aun calls the Cadarians the Magi or Manichees of the Moslems.

CADENCE, or **REPOSE**, in *Music* (from the Latin *cadere*, to fall or descend), the termination of an harmonical phrase on a repose, or on a perfect chord.

CADENCE, in *Reading*, is a falling of the voice below the key-note at the close of every period. In reading, whether prose or verse, a certain tone is assumed, which is called the *key-note*; and in this tone the bulk of the words are sounded; but this note is generally lowered towards the close of every sentence.

CADENET, a city of the department of the Vaucluse, in France, on the right bank of the Durance, with distilleries for brandy, and 2447 inhabitants.

CADEROUSE, a city of the department of Vaucluse, in France, where are several silk mills. It contains 800 houses and 3876 inhabitants.

CADET, the younger son of a family, is a term naturalized in our language from the French. In Spain it is usual for one of the cadets in great families to take the mother's name.

CADET is also a military term denoting a young gentleman who chooses to carry arms in a marching regiment as a private man. His views are, to acquire some knowledge in the art of war, and to obtain a commission in the army. Cadet differs from volunteer, as the former takes pay, whereas the latter serves without pay.

CADI, or **CADHI**, a judge of civil affairs in the Turkish empire. It is generally taken for the judge of a town, judges of provinces being distinguished by the appellation of *mollahs*.

CADILESCHER, a capital officer of justice among the Turks, answering to a chief justice among us. There are but three cadileschers in all the grand seignior's territories; the first is that of Europe, the second that of Natolia, and the third resides at Grand Cairo. This last used to be the most considerable. The cadileschers have seats in the divan next to the grand vizir.

CADILAC, a city of the department of the Gironde, in France, where there are some considerable iron-works, and cutlery and other goods made. The inhabitants are 1326.

CADIZ, the most important maritime city of Spain. It is situated in the province of Seville, one of the four divisions of Andalusia. Its situation is peculiarly favourable for foreign commerce, especially with the western world, as being more southerly and westerly than any other considerable port. Its harbour, or rather bay, is a most secure port; and the entrance, though obstructed by some groups of rocks, which, being visible, may be avoided, is both easy and safe. The anchorage-ground is good for holding, and it is well protected by strong fortifications. Vessels cannot indeed approach the wharfs, but must be loaded and unloaded by the assistance of barges; and but for this drawback, it would perhaps be the best port in Europe. It is situated at the extremity of a long ridge of sand, which connects it with the Isla de Leon, and separates the bay from the ocean. If those who defend Cadiz are masters of the sea, it is perhaps the most impregnable fortress in the world; but by means of a superior naval force and a large army, it is thought by the best judges to be liable to capture. The spot on which the city is built being very contracted, and incapable of extension, the streets are in consequence narrow, and the houses lofty, so that those of the public buildings which are not near the walls have their magnificence hid from the eye of common observers.

From its situation, Cadiz is destitute of good water; and though most of the houses have reservoirs for the preservation of rain, a scarcity is felt, and expensively removed by means of numerous boats, which are constantly occupied in the conveyance of water across the bay from the city of Santa Maria. They yearly expend 180,000 guelders in this necessary article. Its principal buildings are the general hospital, which is excellently regulated, and where the aged, the infirm, the sick, and orphans, are relieved. The cathedral, though rich in ornaments, is inferior to most of the episcopal churches in Spain; but a new one, which has been more than ninety years in building, will, if ever it be finished upon the present plan, be extremely magnificent. The other churches are numerous, elegant, and in general richly endowed, and many of them decorated with pictures, the productions of Murillo, Velasquez, Zubaron, and the other great masters of the Spanish school.

When Spain possessed a navy, the principal arsenal was at Caraccas, which is reached by the largest ships through an inlet from the bay of Cadiz. The magazines and stores are beautiful, and well adapted for the design; and the arsenal is well guarded by a deep ravine on one side, which separates it from the continent, and by impassable marshes on the other.

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As Cadiz is situated on the extremity of a sand-bank, its commerce depends on the country around it, and on the security which its port affords to all property when once within it. It has hence become the entrepôt for almost the whole extensive commerce of the Spanish empire in the western hemisphere. The articles required for the supply of these colonies from Russia, Germany, England, Holland, and France, as well as the manufactures of Spain, are first collected here, and from hence distributed over the whole surface of Spanish America. The whole of the gold and silver from Mexico and Peru, and the other valuable productions of those countries, centre here, and are then diffused over the surface of Europe, in return for the various commodities that have been furnished. The imports from America in 1805 amounted in merchandise to 45,865,396, and in silver to 77,328,403 guelders. Besides this commerce with America, Cadiz is the focus into which are collected the wines and oils which Andalusia produces, and the other valuable commodities of the adjacent country.

The custom-house is a well-regulated establishment, and enjoys in its various store-houses great conveniences for the reception of such goods as are brought to it to be re-exported. The trade of Cadiz, like that of most of the other more eminent maritime cities in the Spanish dominions, is under the regulation of a body called the Consulado, consisting of the principal merchants, who have very considerable power and wealth as a corporation, and are besides a tribunal for determining such legal questions as are purely commercial.

The police of the city is regulated by the cabildo or municipal corporation, to whom, under the orders of the governor, is intrusted the preservation of the public walks and buildings, the cleansing and lighting of the streets, the care of the prisons and hospitals, and other similar objects.

Several establishments in this city bespeak an attention not merely to commerce, but to science. There is a college, in which both the classics and mathematics are taught, as well as the theology of the Peninsula. There is an astronomical observatory, in which observations are continually made, and where a nautical ephemeris is composed, which does not suffer by comparison with those of Greenwich or of Paris. Some of the best maps extant have been framed by those who were educated here; and the names of Malaspina, Lopez, Tofini, and Rios de Mendoza, will be of equal authority with any that England or France has produced.

This city was known before the Roman conquest as a place of trade, and not improbably was the port of Tarshish, to which the ships of Solomon resorted. Under the name of Gades it was long occupied by the Romans, and was a place of great importance to Cæsar in his wars with the Pompeys. A bridge called Puente de Suarzo, leading from the continent to the city, was, according to tradition, constructed by that commander; but though it is now known to be of more recent erection, it is highly probable, from the importance of the passage, that a bridge on the spot was erected by the Roman conqueror.

The inhabitants of Cadiz, in ordinary times, amount to about 75,000. During the late war, when it was the ultimate refuge of the government, they are said to have been trebled; but of this, and the other occurrences of the war, the article SPAIN will narrate the particulars. Very accurate observations have fixed the observatory to be in north latitude 36. 32, and west longitude 2. 33. 54. from Madrid, or 5. 45. 54. from Greenwich. (G.)

CADIZADELITES, a sect of Mahomedans very like the ancient Stoics. They shun feasts and diversions, and affect an extraordinary gravity in all their actions; they

Cadmean
Letters
||
Cadmus.

are continually talking of God, and some of them make a jumble of Christianity and Mahomedanism. They drink wine, even in the fast of the Ramazan; they love and protect the Christians; they believe that Mahommed is the Holy Ghost; they practise circumcision, and justify it by the example of Jesus Christ.

CADMEAN LETTERS, the sixteen ancient Greek or Ionic characters, such as they were first brought by Cadmus from Phœnicia, whence Herodotus calls them also Phœnician Letters. According to some writers, Cadmus was not the inventor, nor even the importer, but only the modeller and reformer, of the Greek letters; and it was from this circumstance they acquired the appellation Cadmean or Phœnician Letters; whereas, before that time, they had been called Pelasgian Letters.

CADMIUM. This metal has not yet been met with in its native state, but is contained in certain ores of zinc, and especially in the black fibrous blende of Bohemia, which contains about five per cent. of it. It was discovered by M. Stromeyer in 1817, who used the following process for separating it from its ore. He dissolved it in dilute sulphuric or muriatic acid, and, after adding a portion of free acid, transmitted a current of sulphuretted hydrogen gas through the liquid, by which means the cadmium was precipitated as sulphuret, while the zinc remained in solution. The sulphuret of cadmium was then decomposed by nitric acid, and the solution evaporated to dryness; then the dry nitrate of cadmium was dissolved in water, and an excess of carbonate of ammonia added. The white carbonate of cadmium subsides, which, when heated to redness, yielded a pure oxide, and by mixing this oxide with charcoal, and exposing it to a further heat, metallic cadmium was obtained in the form of sublimation. Dr Wollaston's process is somewhat more simple; he placed the solution of the mixed metals in a platinum capsule along with a piece of metallic zinc. If cadmium be present it is reduced, and adheres to the capsule, after which it may be dissolved, either by nitric or dilute muriatic acid.

The cadmium thus obtained has in colour and lustre a strong resemblance to tin, but is somewhat harder and more tenacious. It is very ductile and malleable; melts at about the same temperature as tin, but is nearly as volatile as mercury; condensing like it into globules which have a metallic lustre. When heated in the open air it absorbs oxygen, and is converted into an orange-coloured oxide. It is readily dissolved by nitric acid, but is less easily acted upon by sulphuric and muriatic acids. Its specific gravity is 8.62.

CADMUS, in fabulous history, king of Thebes, the son of Agenor, king of Phœnicia, and the brother of Phœnix, Cilix, and Europa. According to tradition, he carried into Greece the sixteen simple letters of the Greek alphabet; and there built Thebes, in Bœotia. The poets say that he left his native country in search of his sister Europa, whom Jupiter had carried away in the form of a bull; and that, inquiring of the Delphic oracle for a settlement, he was answered, that he should follow the direction of a cow, and build a city where she lay down. Having arrived among the Phocians, he was met by a cow, which conducted him through Bœotia to the place where Thebes was afterwards built. But when he was about to sacrifice his guide to Pallas, he sent two of his company to the fountain Dirce for water, where they were devoured by a serpent or dragon; upon which Cadmus slew the monster, and afterwards, by the advice of Pallas, sowed his teeth, when there sprung up a number of armed soldiers, who prepared to revenge the death of the serpent; but on his casting a stone among these upstart warriors, they turned their weapons against each other with such animosity, that only five survived

the combat, and this remnant assisted Cadmus in founding his new city. Afterwards, to recompense his labours, the gods gave him Harmonia, or Harmione, the daughter of Mars and Venus; and honoured his nuptials with presents, and peculiar marks of favour. But at length resigning Thebes to Pentheus, Cadmus and Harmione went to govern the Eccellenses; and when they grew old they were transformed into serpents, or, as others say, sent to the Elysian fields in a chariot drawn by serpents.

CADMUS of Miletus, a celebrated Greek historian, was, according to Pliny, the first of the Greeks who wrote history in prose. He flourished about 550 before Christ.

CADRITES, a sort of Mahomedan friars, who once a week spend a great part of the night in turning round, holding each other's hands, and repeating incessantly the word *hai*, which signifies *living*, and is one of the attributes of God; during which one of them plays on a flute. They never cut their hair, nor cover their heads, and always go barefooted; they have also liberty to quit their convent when they please, and to marry.

CADSAND, an island on the coast of Dutch Flanders, situated at the mouth of the Scheldt, whereby the Dutch command the navigation of that river.

CADUCEUS, in antiquity, Mercury's rod or sceptre, being a wand entwisted by two serpents, borne by that deity as the ensign of his quality and office, and, according to the fable, given him by Apollo for his seven-stringed harp. Wonderful properties are ascribed to this rod by the poets; as laying men asleep, raising the dead, and such like marvels. It was also used by the ancients as a symbol of peace and concord. The Romans sent to the Carthaginians a javelin and a caduceus, offering them their choice either of war or peace. Among that people, those who denounced war were called *feciales*; and those who went to demand peace, *caduceatores*, because they bore a caduceus in their hand. The caduceus found on medals is a common symbol, signifying good conduct, peace, and prosperity. The rod expresses power, the two serpents prudence, and the two wings diligence.

CADUS, in antiquity, a wine vessel of a certain capacity, containing eighty amphoræ or firkins; each of which, according to the best accounts, held nine gallons.

CADUSII, in *Ancient Geography*, a people of Media Atropatene, situated to the west, in the mountains, and reaching to the Caspian Sea; between whom and the Medes perpetual war and enmity continued down to the time of Cyrus.

CADUTINADA, a small district of Hindustan, in the province of Malabar. It is well cultivated, and is naturally a rich country, containing a large proportion of rice ground. But the grain which it produces is scarcely adequate to the support of its inhabitants; and a regular importation takes place from the southern parts of Malalaya, and from Mangalore. The plantations are numerous. The higher parts of the hills are overgrown with wood, which the Nairs formerly encouraged, as it afforded them protection against invaders. The female Nairs in this country, when children, go through the ceremony of marriage, which is, however, merely nominal, as the man and the wife never cohabit. When the girl attains to maturity, she is taken to live in the house of some other Nair. In 1761 a treaty was concluded by the Bombay government with the chief of this country, for the purchase of pepper.

CÆLIUS, **AURELIANUS**, an ancient physician, and the only one of the sect of the Methodists of whom we have any remains. He was a native of Sicea, a town of Numidia; but in what age he flourished cannot be determined. It is probable, however, that he lived before Galen; since, though he carefully mentions all the physicians before him,

Cadmus.
Cæli.

Caen he takes no notice of Galen. He had read over very diligently the ancient physicians of all sects; and we are indebted to him for the knowledge of many dogmas which are not to be found but in his books *De celeribus et tardis Passionibus*. He wrote, as he himself tells us, several other works; but they have all perished.

CAEN, an arrondissement of the department Calvados, in France. Its extent is 450 square miles. It is divided into nine cantons, which are subdivided into 205 communes, containing 129,863 inhabitants.

CAEN, a city, the capital of the department of Calvados, and of the arrondissement of its own name, in France. It stands on a fine plain at the influx of the Odon into the navigable river Orne. The fortifications are in a dilapidated state. The ground plan of the city has the form of a horse shoe. It has some good places, and streets of moderate width, and the houses are of stone. The dwellings are 8000, and the inhabitants amount to 36,361. It is a manufacturing town, which produces silk and thread lace, a large quantity of hosiery, woollen, linen, and cotton goods, besides snuff, leather, porcelain, wax-candles, paper, parchment, and other articles. It has extensive fisheries on the sea, and some foreign ships repair to its harbour. There is also some internal trade up the river Orne. The city has some good institutions for education and for promoting a knowledge of the fine arts. It is situated in latitude 49. 11. 12. N. and longitude 0. 26. 58. W.

CÆRE, in *Ancient Geography*, a town of Etruria, the royal residence of Mezentius. Its ancient name was *Argyllæ*. In Strabo's time not the least vestige of it remained, except the baths called *caeretana*. From this town the Roman censor's tables were called *cærites tabulæ*.

CAERLEON, a market-town of the hundred of Usk, in Monmouthshire, 157 miles from London. Near it are some ruins designated by the people Arthur's Round Table. The market day is Thursday. The inhabitants amounted in 1801 to 667, in 1811 to 821, in 1821 to 1062, and in 1831 to 1071.

CAERMARTHEN, the capital town of the county of that name, in South Wales. It is situated in a beautiful valley on the river Towy, which is navigable to it. It is an ancient place, was once fortified, and is the best built town in the principality. In the reign of James I. it was incorporated as a town and county of itself. Near to it are some iron and tin works; but the commerce is considerable for the population, who, in some measure, derive their occupation from its being a kind of capital for Wales, as relates to the Stannery courts and the great sessions. There are markets on Wednesday and Saturday. It confers the title of Marquis on the Duke of Leeds. The inhabitants amounted in 1811 to 7275, in 1821 to 8906, and in 1831 to 9995.

CAERMARTHENSHIRE, a county in South Wales, containing 926 square miles, or about 590,640 acres. The northern and eastern parts are mountainous. Near the sea the land is flat, but the general surface of the county is hilly. It is intersected in almost every direction by valleys, from the sides of which the hills rise abruptly. These valleys are, for the most part, very narrow. The most celebrated for fertility and picturesque beauty, as well as the most extensive, is the vale of Towy, which stretches thirty miles up the county, with a breadth of only two miles. From the celebrated Grongar Hill, and the ruins of the Castle of Dynevor, the picturesque beauties of this vale are seen to the greatest advantage.

The principal rivers in Caermarthenshire are the Towy, the Teivy or Tair, the Cothy, the Dulas, and the Gwilly. The Towy rises in Cardiganshire. It enters Caermarthenshire at its north-eastern corner, crossing towards the south-west, and, passing Caermarthen, it empties itself

into the large bay between the counties of Glamorgan and Pembroke, called Caermarthen Bay. Many rivulets join the Towy in its course, among which is the Cothy. This stream rises on the north side of the county, and, running mostly in a southern direction, unites with the Towy about six miles above Caermarthen. The Teivy rises in Cardiganshire, between which county and Caermarthenshire it afterwards forms the boundary: soon after receiving the Keach, it enters the county of Pembroke.

The principal ports in this county are Llanelly, Kidwelly, Caermarthen, and Llaugharne. Llanelly has a good port for vessels of ten feet draught, formed by an inlet of the sea called Burry River, which divides this county and Glamorganshire. Llanelly is the port of entry of Kidwelly and Caermarthen: its exports are coal and tinned iron plates. Kidwelly is situated on two small streams called Givandraeth, which form a little haven, but mostly choked with sand. From this town a canal has been cut, at the expense of a private gentleman, between three and four miles long, to his coal-mines and lime-quarries; and by means of this canal Kidwelly has been enabled to export a considerable quantity of coals. Vessels of 250 tons burden ascend to the bridge of the town of Caermarthen on the Towy, but the entrance of the river is rather difficult, in consequence of a bar across it. The principal exports of Caermarthen are tin plates and cast iron. Llaugharne, on a creek, is chiefly remarkable for a considerable flat tract in the vicinity, embanked from the sea, and of singular fertility.

The climate of this county is soft and mild, but moist; the soil of the lower districts is fertile, being for the most part either a rich clay or a sharp or deep loam. Little wheat is grown; and, except on the lighter soils, barley is not a common crop; but oats are extensively cultivated, and, in respect both of produce and quality, are a very profitable crop. Great quantities are exported, chiefly to Bristol. The pasture lands, especially where the soil is suitable, support a heavy stock; they are applied either to the dairy or to the breeding of black-cattle and horses. The latter are reared in great numbers on the hills, and constitute the principal article of trade at the fairs of this and the adjacent counties. Much butter is exported. It is computed that 114,000 acres are in tillage, and about double that number in pasture; the rest is unfit for cultivation, though by no means unprofitable. According to the original agricultural report of this county, there are only about 170,000 acres of wastes and commons. This county was formerly extremely well wooded; but of late years great waste has been made of the timber. Its rivers and sea-coast abound in fish, especially salmon of excellent quality, and a species of trout, called *suen*, in high request with epicures.

Caermarthenshire is rich in mineral productions. Coals and lead are the most abundant and profitable. The greatest lead-mines are not far from Llandowry. Limestone also abounds, and there are considerable quantities of iron ore. The sands in the vicinity of Llaugharne, according to Mr Donovan, abound in shells of great rarity and beauty. On the road from Caermarthen to Llandillo Vawr a medicinal spring has lately been discovered, containing carbonic acid gas, carbonate of iron and lime, muriate of soda and lime, and sulphate of lime. At Kastell-Karreg there is a fountain which ebbs and flows twice in twenty-four hours. There are several remains of antiquity, chiefly Roman, to be seen in Caermarthenshire.

The inhabitants who are not engaged in agriculture are principally employed in working the mines, in manufacturing the produce of these mines, and in making woollen stockings. The most extensive manufactures of tinned iron plates are carried on at Kidwelly, where are also other

Caermarthenshire.

Caernarvon manufactures of iron, for which there are large and excellent furnaces, forges, flatting-mills, &c. Tinned plates and cast iron are also manufactured at Caernarthen, and the works in both branches are extensive. In the neighbourhood of Llandowry the woollen-stocking manufactory principally prevails.

The money raised for the maintenance of the poor in 1803 was L.17,046, at the rate of 12s. 9d. in the pound. In the year ending the 25th of March 1815, there was

paid, in parochial rates, the sum of L.30,354. 6s. 9½d. from eighty-three parishes alone, the remaining forty-three not having made any return. By the population returns in the year 1800 there were 13,449 inhabited houses, 67,317 inhabitants, 31,439 males, and 35,878 females; of this number 32,862 were returned as employed in agriculture, and 4343 as employed in trade. The following are the results of the population returns in 1811, 1821, and 1831.

YEAR.	HOUSES.			OCCUPATIONS.			PERSONS.		
	Inhabited.	By how many Families occupied.	Uninhabited.	Families chiefly employed in Agriculture.	Families chiefly employed in Trade, Manufactures, or Handicraft.	All other Families not comprised in the two preceding classes.	Males.	Females.	Total of Persons.
1811	14,856	16,083	333	9,878	5256	949	36,080	41,137	77,217
1821	16,402	18,392	333	9,628	4823	3941	43,577	46,662	90,239
1831	.....	.....	.....	.....	.....	.....	.....	.....	100,800

CAERNARVON, the capital of the county of that name in South Wales. It is a very ancient town; and the castle, in which the first prince of Wales was born, is in better preservation than any other of the ancient edifices of that kind and age in the kingdom. The town, which is on the entrance of the Menai Strait, is finely situated, commanding a view of Anglesey and the mountain Snowdon. The principal trade to its port is for slate, which is found in abundance near it. A market is held on Saturday, and is well attended. The population amounted in 1811 to 4595, in 1821 to 5788, and in 1831 to 7642.

CAERNARVONSHIRE, a county in North Wales, is divided by the Conway from Denbighshire, from part of Merionethshire by a rivulet, from Anglesey by the Straits of Menai; and the residue is bounded by the sea. In figure it is very irregular, a great peninsulated point running out from it to the south-west. From the extremity of this point the length is forty-five miles; the breadth varies extremely; its circumference is about 150 miles. According to a late survey, it contains 300,000 acres of land, of which, by one account, about 200,000, and, by another account, only 160,000, are in a state of cultivation.

This county is the most mountainous in Wales. Its central part is entirely occupied by Snowdon, and its subordinate mountains extend from near Conway in the north-east to the shore that bounds the Perthorian road, including the Rhifel ridges. The Snowdon Mountains are connected with another chain of hills, which approach the sea at Aberdaron. Among these are very deep passes, forming narrow valleys, through which numerous streams, issuing from various lakes, rush in some places with great violence. The highest region of the mountainous district is covered with snow during the greater part of the year; the middle region affords fuel and pasturage, though the woods which once clothed it are nearly exhausted. The bases of the mountains, and the valleys, are in general temperate and fertile. The vale of Conway is the most extensive in the county; it is a long and narrow tract, equally romantic and beautiful, through which the river of the same name runs. At first it is very narrow, but it gradually widens to the breadth of a mile. Its extent is about twenty miles, terminating at the town of Conway. It affords rich pasturage, especially near Llanwost, where it is formed into the finest meadows, corn-fields, and groves, and exhibits a striking and pleas-

ing contrast to the bleak regions of Snowdon frowning above it.

The general escarpment of the mountains, which rise from the sea towards the centre of this county, fronts the sea; but the particular escarpment of the detached groups depends upon the course of the streams. The mountain of Snowdon is composed of various cliffs of different heights; the altitude of the highest point of the mountain is about 3600 feet from the high-water mark on Caernarvon quay. Snow lies all the year in the hollows near the top of Snowdon, the temperature here being very low, even in the middle of summer. On the morning of the 5th of July 1795, just after sunrise, Mr Aikin observed the thermometer at 34, whereas in the vale of Beddgelst, at seven in the morning, it was at 62; at one in the afternoon it had reached only forty-eight on the top of Snowdon.

The principal rivers in Caernarvonshire are the Conway and the Seiont. The first rises from a lake on the confines of Denbigh, Merioneth, and Caernarvon. Its course is nearly in a northerly direction, along the east side of the county, for about twenty-four miles, when it empties itself into the sea at the town of the same name; it is half a mile wide at the Tash at high water, and not above fifty yards at low, the remaining space being sand-banks, which at high water are covered to the depth of twelve feet. These sands still abound in the pearl muscle, as they did in the time of the Romans; but they have been long neglected. The Conway is navigable for about twelve miles. The Seiont rises from a lake near Snowdon; its course is westward, and it runs into the Menai Strait at Caernarvon. The bar admits vessels of about 300 tons into the haven.

The sea-coast of this county presents many objects worthy of notice. Traeth Bach and Traeth Mawr are two inlets of the sea having one entrance, and each receiving a little river. The greater part of them are dry at low-water, and become quicksands. They lie between Caernarvonshire and Merionethshire, but as they seem more properly to belong to the latter county, the attempts of Mr Maddocks to embark the sands of Traeth Mawr will more properly be noticed under Merionethshire. Passing from this county into Caernarvonshire, the first sea-port is Pwllheli, on an inlet which receives three or four rivulets. It has a considerable coasting trade in small vessels. St Tudwell's bay is sheltered by two small islands. To it succeeds the bay named Hell's Mouth, from the

Caernarvonshire.

Gaernarvonshire is an interesting county to the mineralogist; but we can only notice very briefly the principal features of its mineralogy. The highest and interior re-

The money raised for the poor in 1803 was £.9137, being at the rate of 4s. 0 $\frac{3}{4}$ d. in the pound. In the year ending the 25th of March 1815, there was paid in parochial rates the sum of £.15,776. 17s. 6d. In 1800 there were 8304 inhabited houses, and 41,521 inhabitants; 19,586 males, and 21,935 females, of whom 12,808 were employed in agriculture, and 4234 in manufactures, trade, and handicrafts. The inhabitants live in a state of the utmost simplicity, manufacturing their clothes from the wool of their own flocks, and dyeing them with lichens; while a little oatmeal added to the produce of their dairies constitutes their food. In 1811, 1821, and 1831, the results of the population returns were as follows:

[illegible]

Caerwys
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Cæsalpi-
nus.

CAERWYS, a market-town in the hundred of Rhyddlan, in Flintshire, North Wales, five miles from St Asaph and 212 from London. The market is held on Tuesday, and is much frequented. The inhabitants amounted in 1801 to 773, in 1811 to 822, and in 1821 to 952.

CÆSALPINUS, ANDREW, one of those great and daring geniuses who, contending with the mists of a dark age, elicit the most brilliant truths on the one hand, whilst they sometimes wander into great absurdities on the other, was born at Arezzo in Tuscany in 1519. Of his family nothing is recorded, nor does he appear to have left any progeny, or to have been ever married. Devoted to the studies of physic and natural philosophy, he attained at length the honour of being physician to Pope Clement VIII., during the chief part of whose pontificate, from 1592 till his own death in 1603, at the age of eighty-four, Cæsalpinus lived at Rome, in the highest credit and celebrity; for which, as we trace the circumstances of his history, and inquire into his opinions, it seems at first sight difficult to account. Eminent talents have seldom proved a shield against persecution. On the contrary, by adding fear to its malice, they have generally tended to exasperate its fury. How then could Cæsalpinus, a professed Aristotelian, and an open unbeliever of revealed religion, whose opinions nearly approached those of Spinoza, exist in the holy court of Rome, which was then beginning to persecute the immortal Galileo? This mystery will but too readily unravel itself.

Cæsalpinus seems to have been furnished with two distinct philosophical intellects, which, like a good and evil genius, directed him by turns. Under the influence of the one he discovered the circulation of the blood, the sexes of plants, and the only true principles of botanical classification; under the guidance of the other he became entangled in the metaphysics of the schools, the dreams of Aristotle, and a philosophic contempt for every thing, good or bad, connected with the nonsense he was obliged publicly to respect. It is scarcely necessary to remind the reader, that, however brilliant the reign of literature and taste in the golden age of Leo X. and the times which immediately succeeded, true science and experimental philosophy were as yet in the cradle. In this respect the time of Cæsalpinus was "dark as Erebus," and the light he struck out was altogether his own.

We have no account of this great man till we find him seated in the botanical chair of the University of Pisa, where also he studied, if he did not teach, anatomy and medicine. His first publication was entitled *Speculum Artis Medicæ Hippocraticum*, in which it were too much to expect he should have released himself from the shackles of his venerable guide; but he has left evident proofs, in a passage often quoted, of his having a clear idea of the circulation of the blood, at least through the lungs. In botany his inquiries were conducted on a more original plan, and their result was one of the most philosophical works in that science, which issued from the press at Florence in 1583, in one volume quarto. The title-page runs thus: *De Plantis libri XVI. Andrea Cæsalpini Aretini, Medici clarissimi doctissimique, atque Philosophi celeberrimi ac subtilissimi*; yet he appears to have been himself the editor of the work, to which is prefixed, in his own name, an elegant and learned epistle dedicatory to Francis de' Medici, grand duke of Tuscany. This book, now rarely to be met with, is not only the unacknowledged source from which various subsequent writers, and especially Morison, derived their ideas of botanical arrangement; but it was a mine of science to which Linnæus himself gratefully avowed his obligations. His own copy evinces the great assiduity with which he studied the book. He has laboured throughout to remedy the defect of which Haller com-

plains, of the want of synonyms; and has subjoined his own generic names to nearly every species. He has particularly indicated those remarkable passages, in pages 13 and 15, where the germination of plants and their sexual distinctions are explained. In the former we trace the first rudiments of a natural classification of plants by the differences in their cotyledons; or, in other words, we find the origin of the natural systems of Linnæus and Jussieu: in the latter passage we detect the fundamental principle of the Linnæan artificial system. Nor were these merely incidental suggestions of the illustrious author. He has pursued his inquiries to a conclusion on which the existence of botany as a science depends, and which the no less eminent Conrad Gesner detected about the same time, though his ideas respecting it were not then made public. The principle to which we allude is the classification of plants by their parts of fructification alone. This was afterwards extended, by the greatest writers on the subject, as Ray and Tournefort, and more completely by Linnæus, to the discrimination of their genera by the same parts, more particularly considered and contrasted. To this more extensive conclusion, indeed, the principle of Cæsalpinus directly and inevitably leads. He pursued it himself to such a length, as to develop some of the most important characters for generic distinctions, such as the flower being superior or inferior with respect to the fruit; the heart of the seed situated at its summit or base; the seeds, or the cells of the seed-vessels, solitary or otherwise; the partitions of certain pericarps parallel or contrary to their valves. Linnæus remarks that this author, though the first systematical botanist, found out as many natural classes, or orders, as any of his followers. He did not indeed define well the philosophical limits of genera in the vegetable kingdom, and therefore his work cannot be regularly quoted throughout for generic synonyms. The want of plates of his own, and of references to other authors, render, as we have already hinted, some of his names and descriptions unintelligible. Yet Linnæus has in manuscript filled up many blanks which he had been obliged to leave in his own *Classes Plantarum*, where the system of Cæsalpinus first assumed a synoptical form. This author might probably have adopted a more clear and methodical mode of arranging and explaining the botanical part of his subject, had he not had in view the vague and desultory manner of Pliny, whom he closely imitates in the materials of his numerous chapters, as well as in his style of description. A small and unimportant *Appendix* to this work, of nineteen pages, appeared at Rome in 1603, which is of very rare occurrence, but may be found reprinted in Boccone's *Museo di Pianta Rare*, p. 125.

Cæsalpinus printed at Rome, in 1596, a quarto volume of above two hundred pages, entitled *De Metallicis*, dedicated to Pope Clement VIII. which, like his botanical publications, is now extremely rare. In the philosophy of this work Aristotle is his guide; in its method and composition, Pliny. A prefatory address to the pope declares it to have been undertaken in opposition to a certain treatise on the same subject, which, though written with diligence and elegance, contained many things inconsistent with the principles of philosophy, and subversive of the peripatetic doctrines; and with the author of which, as being excommunicated by the holy church of Rome, no measures were to be kept.

In our author's *Questionum Peripateticarum libri quinque*, published at Rome in 1603, it appears that he scrupled not to stand forth as an open defender of the Aristotelian philosophy, without any concealment of his own peculiar opinions and hypotheses derived from thence. By these he incurred the charge of atheism, preferred by a physician

Cæsal-
nus

named Taurel, who, punning on the name of his antagonist, entitled his book *Alpes cæseæ, hoc est, Andree Cæsalpini monstrosa dogmata discussa et excussa*. This attack, however, met with little or no countenance; and the learned Aristotelian died in the course of the year, receiving, no doubt, in the very focus of sanctity itself, the funeral honours due to an orthodox physician of his holiness.

Of the medical publications of Cæsalpinus, entitled *Praxis Universæ Medicinæ*, and *De Medicamentorum Facultatibus*, we have had no opportunity of forming an opinion for ourselves. By what is to be gathered from his other writings, his ideas of the medical qualities of plants and fossils seem adopted from ancient writers rather than from any considerable portion of actual experiment. Like other physicians of his time, he was too much occupied in ascertaining the articles of the *materia medica*, to find leisure for doubt, or for practical inquiry, respecting the truth of their reputed virtues. He did, however, promulgate some original ideas relative to the investigation of the properties of plants by their taste and smell. With botany he was not only theoretically but practically conversant. He left behind him a collection of above 760 dried specimens, one of the earliest upon record, which is said to have come into the hands of Micheli, and therefore is doubtless still preserved in the museum of Dr Targioni Tozzetti at Florence. A catalogue of this venerable herbarium is reported to have been prepared for the press, but we do not find that it ever appeared.

Cæsalpinus having been settled at Pisa when the great Galileo first presumed to doubt the infallibility of the Aristotelian philosophy, and, most likely, when that rising character became, at the age of twenty-six, professor of mathematics in the same university, we cannot presume him to have been free from the party-spirit which so disgracefully manifested itself there. He must have concurred in the measures which his own associates, leagued with the ruling powers, thought proper to adopt. The ancient school philosophy, derived from the Peripatetics, whether it was considered as a mere abstract speculation, or whether, as being equally absurd and unintelligible with the orthodox establishment, it did not excite alarm, was, as every body knows, allowed to go on very lovingly with that establishment; nor did it, in general, raise any more suspicion than the heathen mythology, studied and exemplified in the same and other schools. But when a spirit of truth and inquiry arose, when principles and opinions were to be submitted to the tests of reason and experiment, the same fatal results which the preceding age had witnessed in what was called religion, were justly apprehended for what was now with scarcely more propriety denominated philosophy. Hence the papal authority, which had suffered shipwreck in the one case, wanting the wisdom to avoid a similar disgrace in the other, gladly clung for support to any ally. These two celebrated occasions, the divorce of Henry VIII. and the base persecution of Galileo, are almost the only ones in which the authority of the pope has been exerted about any matter that human reason could determine, or that much signified, except to his own immediate dependents, how it might be determined. It is a memorable fact, that his decision was no less just in one case than unjust in the other; yet both proved equally ruinous, the former to his power, the latter to his credit. So hazardous is the exercise of usurped or overstrained authority, and so infallibly, thanks to the Author of all Good, do truth and justice rise, with renovated vigour, from such contests.

By this view of our subject the mystery above alluded to becomes clearly unravelled. Cæsalpinus, though a known heretic and infidel, professing to be an obedient son, and even a champion, of the church, tried to rise by

the ruin of equally learned and more honest men than himself. On the side on which he was absurd and censurable, and on that side only, he was unjust and unprincipled; nor is such a character uncommon. Where he exercised his unbiassed judgment, and honestly sought for truth, he, like Galileo, enlarged the bounds of human knowledge, and made discoveries which will for ever claim the gratitude and admiration of mankind. (x. x.)

CÆSAR, JULIUS, the illustrious Roman general and military historian, was of the family of the Julii, who pretended they were descended from Venus by Æneas. The descendants of Ascanius, sons of Æneas and Creüsa, and surnamed Julius, lived in Alba till that city was ruined by Tullus Hostilius, king of Rome, who carried them to Rome, where they afterwards flourished. We do not find that they produced more than two branches. The first bore the name of Tullus, the other that of Cæsar. The most ancient of the Cæsars were those who held public employments in the eleventh year of the first Punic war. After that time some of the family always enjoyed public offices in the commonwealth, till the time of Caius Julius Cæsar, the subject of this article. He was born at Rome the 12th of the month Quintilis, in the year of the city 653, and lost his father in 669. By his valour and eloquence he soon acquired the highest reputation both in the field and in the senate. Beloved and respected by his fellow-citizens, he enjoyed successively every magisterial and military honour the republic could bestow consistently with its own free constitution. But at length having subdued Pompey, the great rival of his growing power, his boundless ambition effaced the glory of his former actions. For, pursuing his favourite maxim, that he had rather be the first man in a village than the second in Rome, he caused himself to be chosen perpetual dictator; and, not content with this unconstitutional power, his faction had resolved to raise him to the imperial dignity; when the friends of the civil liberties of the republic rashly assassinated him in the senate-house, instead of seizing and bringing him to a legal trial for usurpation. By this impolitic measure they defeated their own purpose; involved the city in consternation and terror, which produced general anarchy; and paved the way for the revolution which they wished to prevent, the monarchical government being absolutely founded on the murder of Julius Cæsar. He fell in the fifty-sixth year of his age, and the forty-third before the Christian era. His *Commentaries* contain a history of his principal voyages, battles, and victories. The London edition in 1712, in folio, is preferred. See ROME.

CÆSAR, in *Roman Antiquity*, a title borne by all the emperors, from the time of Julius Cæsar till the destruction of the empire. It was also used as a title of distinction for the intended or presumptive heir of the empire, as *King of the Romans* was latterly used for that of the German empire.

This title took its rise from the surname of C. Julius Cæsar, which, by a decree of the senate, all the succeeding emperors were to bear. Under his successor, the appellation of *Augustus* being appropriated to the emperors, in compliment to the prince of that name, the title *Cæsar* was given to the second person in the empire, though still it continued to be given to the first; and hence the difference betwixt Cæsar used simply, and Cæsar with the addition of Imperator Augustus.

The dignity of Cæsar remained to the second of the empire, till Alexius Comnenus having elected Nicephorus Melissenus Cæsar by contract, and it being necessary to confer some higher dignity on his own brother Isaacius, he created him Sebastocrator, with the precedency over Melissenus; ordering, that in all acclamations, Isaacius

Caesar
||
Cæteris.

Sebastocrator should be named the second, and Melissenus Cæsar the third.

CÆSAR, *Sir Julius*, a learned civilian, was descended by the female line from the Duke de Cessarini in Italy, and was born near Tottenham in Middlesex in the year 1557. He was educated at Oxford, and afterwards studied in the university of Paris, where, in the year 1581, he was created doctor of the civil law, and two years afterwards was admitted to the same degree at Oxford, and also became doctor of the canon law. He was advanced to many honourable employments, and for the last twenty years of his life was master of the rolls. He was remarkable for his extensive bounty and charity to all persons of worth, so that he seemed to be the almoner-general of the nation. He died in 1639, in the seventy-ninth year of his age. It is very remarkable that the manuscripts of this lawyer were offered, by the executors of some of his descendants, to a cheesemonger as waste paper; but being timely inspected by Mr Samuel Pater-son, this gentleman discovered their value, and had the satisfaction to find his judgment confirmed by the profes-sion, to whom they were sold in lots, for upwards of L.500, in the year 1757.

CÆSAREA, an ancient city of Palestine, of great cele-brity, but now in ruins, and entirely deserted. It is situ-ated on the sea-coast, and had an extraordinary harbour, which, according to Josephus, was constructed by Herod. Louis IX. of France is said to have rebuilt its walls dur-ing the holy wars. The adjacent ground is covered to a great extent with numerous and magnificent remains of antiquity. When this country was visited by Pococke, Cæsarea was inhabited by a few families; but at the time it was visited by Dr Clarke it was quite deserted. It is 36 miles from Acre, and 62 from Jerusalem.

CÆSAREAN OPERATION. See MIDWIFERY.

CÆSARIANS, *Cæsarienses*, in *Roman Antiquity*, were officers or ministers of the Roman emperors. They kept the account of the revenues of the emperors, and took possession in their name of such things as devolved or were confiscated to them.

CÆSONES, a denomination given to those cut out of their mothers' wombs. Pliny ranks this as an auspicious kind of birth; the elder Scipio Africanus, and the first of the family of the Cæsars, were brought into the world in this way.

CÆSTUS, in *Antiquity*, a large gauntlet made of raw hide, which the wrestlers made use of when they fought at the public games. This was a kind of leathern strap, strengthened with lead or plates of iron, which encompassed the hand, the wrist, and a part of the arm, as well to defend these parts as to enforce their blows.

CÆSTUS, or *Cæstum*, was also a kind of girdle, made of wool, which the husband untied for his spouse the first day of marriage.

CÆSURA, in the ancient poetry, is when, in the scan-ning of a verse, a word is divided, so that one part seems cut off, and goes to a different foot from the rest.

CÆSURA, in the modern poetry, denotes a rest or pause towards the middle of an Alexandrine verse, by which the voice and pronunciation are aided, and the verse as it were divided into two hemistichs.

CÆTERIS PARIBUS, a Latin term in frequent use among mathematical and physical writers. The words literally signify *the rest, or other things, being alike or equal*. Thus we say, the heavier the bullet, *cæteris pari-bus*, the greater the range; that is, by how much the bul-let is heavier, if the length and diameter of the piece and strength of the powder be the same, by so much will the utmost range or distance of a piece of ordnance be the greater. Thus also, in a physical way, we say, the velo-

city and quantity circulating in a given time through any section of an artery, will, *cæteris paribus*, be according to its diameter, and nearness to or distance from the heart.

CAFFA, in commerce, painted cotton cloths manufac-tured in the East Indies, and sold at Bengal.

CAFFA, KAFFA, or KJEFFE, a town of European Rus-sia, in the Crimea, and at one time the largest and most important place in that peninsula. It is pleasantly situat-ed at the end of a large bay on the northern shore of the Black Sea, and is defended by two forts. The harbour, although capacious, is shallow, and little sheltered from the south-east winds. This town has repeatedly changed masters, but it was finally incorporated with the Russian empire in 1783. Its trade consists principally in stuffs of Turkish manufacture, and in wine, rice, and coffee. Long. 35. 12. 45. E. Lat. 45. 6. 30. N.

CAFFILA, a company of merchants or travellers, who join together in order to go with more security through various countries on the continent of the East Indies, and also Africa.

The caffila differs from a caravan, at least in Persia; for the caffila properly belongs to some sovereign, or to some powerful company in Europe; whereas a caravan is a company of particular merchants, each trading upon his own account. There are also such caffilas which cross some parts of the deserts of Africa, particularly that called the Sahara.

CAGANUS, or CACANUS, an appellation anciently given by the Huns to their kings. The word appears also to have been formerly applied to the princes of Muscovy, now called *czar*. From the same also, probably, the Tar-tar title *cham* or *khan* had its origin.

CAGAYAN SOOLOO, an island in the Eastern Seas, about twenty miles in circumference, of a rich soil, and of luxuriant aspect. It has a good harbour on the north side, with a bar which admits vessels of fifteen feet water. The island is governed by a rajah dependent on Sooloo. Long. 118. 36. E. Lat. 7. N.

CAGE, an inclosure made of wire, wicker, or the like, interwoven lattice-wise, for the confinement of birds or wild beasts. The word is French, *cage*, formed from the Italian *gaggia*, of the Latin *cavea*, which has the same sig-nification: *a caveis theatralibus in quibus includebantur ferae*.

Beasts were usually brought to Rome shut up in oaken or beechen cages artfully formed, and covered or shaded with boughs, that the creatures, deceived with the ap-pearance of a wood, might fancy themselves in their forest. The fiercer sorts were pent in iron cages, lest wooden pri-sons might be broken through. In some prisons there are iron cages for the closer confinement of criminals.

CAGES (*caveæ*) denote also places in the ancient am-phitheatres, wherein wild beasts were kept, ready to be let out for sport. The *caveæ* were a sort of iron cages, diffe-rent from dens, which were under ground and dark; and being airy and light, the beasts rushed out of them with more alacrity and fierceness than if they had been pent up under ground.

CAGGLIANO, a city of Italy, in the province Principa-to-Citeriore of the kingdom of Naples, with 2777 inhabit-ant

CAGLIARI, the capital of the island of Sardinia, as well as of the province of the same name. It stands on the gulf of that name, and contains thirty churches, about 5000 houses, and 25,880 inhabitants. It is the residence of the viceroy, of an archbishop, and the place of assem-bling of the boards of administration and of the courts of justice. It has little commerce, which is chiefly confined to the sale of wine, corn, cheese, and especially of salt refined near it. Long. 9. 0. 25. E. Lat. 39. 15. 20. N.

Caffi
Cagliari

Cagliari
Caille.

CAGLIARI, *Capo Di*, one of the provinces into which the island of Sardinia is divided.

CAGLIARI, *Paolo*, called *Paulo Veronese*, an excellent painter, was born at Verona in the year 1532. Gabriel Cagliari, his father, was a sculptor, and Antonio Badile, his uncle, was his master in painting. He was not only esteemed the best of all the Lombard painters, but by reason of his extensive talents in the art was peculiarly styled *Il Pittor felice*, the happy painter; and there is scarcely a church in Venice where some of his performances are not to be seen. He died of a fever at Venice in 1588, and had a tomb and a statue of brass erected to his memory in the church of St Sebastian.

CAGNANO, a town of Italy, in the Neapolitan province Capitanata, with 3477 inhabitants.

CAHORS, an arrondissement in the department of the Lot, in France. It extends over 865 square miles, and contains twelve cantons, divided into 136 communes, with 106,417 inhabitants. The chief place, from which the arrondissement takes its name, is on the right bank of the Lot, which forms almost a circle round it. It contains 1900 houses, and 11,728 inhabitants. There are in it manufactures of paper, cloths, lace, cassimeres, and leather; and some trade in wine, brandy, nut-oil, and other productions, which is increasing. Long. 1. 21. 15. E. Lat. 44. 26. 49. N.

CAHUSAC, a town of France, in the department of the Tarn, on the river Verre, with 1424 inhabitants.

CAIAPHAS, high priest of the Jews after Simon, condemned Christ to death; and was deprived of his place by the emperor Vitellius, for which disgrace he made away with himself.

CAIFONG. See CHINA.

CAILLAC, an arrondissement of the department of the Tarn, in France, extending over 510 square miles. It is divided into eight cantons and eighty-four communes, and contains 63,736 inhabitants. The capital is a city of the same name, on the river Tarn, which is navigable to a certain extent. It has 1503 houses, and 6636 inhabitants. The chief trade consists in wine, which is produced of the best quality in the vicinity, and largely shipped from Bordeaux to the most remote markets. Long. 1. 45. E. Lat. 43. 50. N.

CAILLE, NICHOLAS LOUIS DE LA, an eminent mathematician and astronomer, was born at a small town in the diocese of Rheims in 1713. His father had served in the army, which he quitted, and in his retirement studied mathematics, and amused himself with mechanic exercises, in which he proved the fortunate author of several inventions of considerable use to the public. Nicholas almost in his infancy took a fancy to mechanics, which proved of signal service to him in his maturer years. He was sent young to school at Mantes-sur-Seine, where he discovered early tokens of genius. In 1729 he repaired to Paris, where he studied the classics, philosophy, and mathematics; and he afterwards went to study divinity at the college de Navarre, proposing to embrace an ecclesiastical life. At the end of three years he was ordained as a deacon, and officiated as such in the church of the college de Mazarin several years; but he never entered into priest's orders, apprehending that his astronomical studies, to which he had become most assiduously devoted, might interfere too much with his religious duties. In 1739 he was conjoined with M. de Thury, son to M. Cassini, in verifying the meridian of the royal observatory throughout the whole extent of the kingdom of France. In the month of November of the same year, whilst he was engaged day and night in the operations which this grand undertaking required, and at a great distance from Paris, he was, without any solicitation, elected to the vacant mathematical chair which the

celebrated M. Varignon had so worthily filled. Here he began to teach about the end of 1740; and an observatory was ordered to be erected for his use in the college, and furnished with a suitable apparatus of the best instruments. In May 1741, M. de la Caille was admitted into the Royal Academy of Sciences as an adjoint member for astronomy. Besides many excellent papers dispersed through their Memoirs, he published elements of geometry, mechanics, optics, and astronomy. Moreover, he carefully computed all the eclipses of the sun and moon that had happened since the Christian era; which were printed in a book published by two Benedictines, entitled *L'Art de Verifier les Dates*, Paris, 1750, in 4to. Besides these, he compiled a volume of astronomical ephemerides for the years 1745 to 1755; another for the years 1755 to 1765; a third for the years 1765 to 1775; an excellent work entitled *Astronomiæ Fundamenta novissimis Solis et Stellarum observationibus stabilita*; and the most correct solar tables which had ever appeared. Having performed a seven years' series of astronomical observations in his own observatory, he formed a project of going to observe the southern stars at the Cape of Good Hope. This was highly approved of by the academy, as well as by the prime minister Comte de Argenson, and very readily agreed to by the states of Holland. Upon this he drew up a plan of the method he intended to pursue in his southern observations; setting forth, that, besides settling the places of the fixed stars, he proposed to determine the parallaxes of the Moon, Mars, and Venus. But as this required contemporaneous observations to be made in the northern parts of the world, he sent to those of his correspondents who were expert in practical astronomy previous notice in print, what observations he designed to make at particular times for the above purpose. At length, on the 21st of November 1750, he sailed for the Cape, and arrived there on the 19th of April 1751. He forthwith got his instruments on shore; and, with the assistance of some Dutch artificers, set about building an astronomical observatory, in which his apparatus of instruments was properly disposed of as soon as the building was in a fit condition to receive them.

The sky at the Cape is generally pure and serene, unless when a south-east wind blows; but this is often the case; and when the wind in question blows, it is attended with some strange and striking effects. The stars look bigger, and seem to quiver; the moon has an undulating tremor; and the planets have beards like comets. Two hundred and twenty-eight nights did our astronomer survey the face of the southern heavens, during which space of time he observed more than 10,000 stars; and as the ancients had filled the heavens with monsters and old wives' tales, the Abbé de la Caille chose rather to adorn them with the instruments and machines which modern philosophy has made use of for the conquest of nature. With no less success did he attend to the parallaxes of the Moon, Mars, Venus, and the Sun. Having thus executed the purpose of his voyage, and no present opportunity offering for his return, he thought of employing the vacant time in another arduous attempt, which was no less than that of taking the measure of the earth, as he had already done that of the heavens. This indeed had, through the munificence of the French king, been done before by different sets of learned men, both in Europe and America, some determining the extent of a degree under the equator, and others its extent under the arctic circle; but it had not as yet been decided whether in the southern parallels of latitude the same dimensions obtained as in the northern. His labours, however, were rewarded with the satisfaction he wished for, having determined a distance of 410,814 feet from a place called Klip Fontyn to the Cape, by means of a base of 38,802 feet, ascertained by three actual measure-

Caille.

Caimacan. méments; and in this way he discovered a new secret of nature, namely, that the radii of the parallels in south latitude are not the same as those of the corresponding parallels in north latitude. About the twenty-third degree of south latitude he found a degree on the meridian to contain 342,222 Paris feet. He returned to Paris on the 27th of September 1754, having, in his almost four years' absence, expended no more than 9144 livres on himself and his companion; and at his coming into port he refused a bribe of 100,000 livres, offered by one who thirsted less after glory than gain, to share his immunity from custom-house searches.

After receiving the congratulatory visits of his more intimate friends and of the astronomers, he first of all employed himself in drawing up a reply to some strictures which Professor Euler had published relative to the meridian; and then he settled the results of the comparison of his own with the observations of other astronomers for the parallaxes. That of the sun he fixed at $9\frac{1}{2}''$, that of the moon at $56' 56''$, that of Mars in his opposition at $36''$, that of Venus at $38''$. He also settled the laws by which astronomical refractions are varied in consequence of the different density or rarity of the air, owing to heat or cold and dryness or moisture. And, lastly, he showed an easy, and by common navigators practicable, method of finding the longitude at sea by means of the moon; which he illustrated by examples selected from his own observations during his voyages. His fame being now established upon a firm basis, the most celebrated academies of Europe claimed him as their own; and he was unanimously elected a member of the Royal Society at London, of the Institute of Bologna, of the Imperial Academy at Petersburg, and of the Royal Academies of Berlin, Stockholm, and Göttingen. In the year 1760, M. de la Caille was attacked with a severe fit of the gout, which, however, did not interrupt the course of his studies; for he then planned out a new and immense work, which was no less than the history of astronomy through all ages, with a comparison of the ancient and modern observations, and the construction and use of the instruments employed in making them. In order to pursue the task he had imposed upon himself in a suitable retirement, he obtained a grant of apartments in the royal palace of Vincennes; and whilst his astronomical apparatus was erecting there, he began printing his *Catalogue of the Southern Stars*, and the third volume of his *Ephemerides*. But towards the end of the year 1763, the state of his health became greatly reduced. His blood grew inflamed; he had pains of the head, obstructions of the kidneys, and loss of appetite, with a plethoric oppression on the whole system. His mind remained unaffected, and he resolutely persisted in his studies as usual. In the month of March medicines were administered to him, which rather aggravated than alleviated his symptoms; and he was now sensible, that the same distemper which in Africa, ten years before, had yielded to a few simple remedies, would in his native country bid defiance to the best physicians. This induced him to settle his affairs: his manuscripts he committed to the care and discretion of his esteemed friend M. Maraldi. It was at last determined that a vein should be opened; but this brought on an obstinate lethargy, of which he died, at the age of forty-nine.

CAIMACAN, or KAIMACAM, in Turkish affairs, a dignity of the Ottoman empire, answering to lieutenant, or rather deputy, amongst us. There are usually two caimacans, one residing at Constantinople as governor of the capital, and the other attending the grand vizir in quality of lieutenant, secretary of state, and first minister of his council, and giving audience to ambassadors. Sometimes there is a third caimacan, who attends the sultan, whom

he acquaints with any public disturbances, and receives his orders concerning them.

CAIMAN, or CAYMAN ISLANDS, three small islands situated fifty-five leagues north-north-west of Jamaica. The southernmost of these islands is called Great Caiman, and contains about 160 inhabitants, whose chief employment consists in fishing for turtle, with which they supply Porto Rical and other places. A considerable number of them are also employed as pilots.

CAIN, eldest son of Adam and Eve, killed his brother Abel, for which he was condemned by God to banishment and a vagabond state of life. Cain retired to the land of Nod on the east of Eden, and built a city, to which he gave the name of his son Enoch.

CAINITES, a sect of heretics in the second century, so called on account of their great respect for Cain. They pretended that the virtue which produced Abel was of an order inferior to that which had produced Cain, and that this was the reason why Cain had the victory over Abel and killed him; for they admitted a great number of genii, which they called *virtues*, of different ranks and orders. They made profession of honouring those who carry in Scripture the most visible marks of reprobation, as the inhabitants of Sodom, Esau, Korah, Dathan, and Abiram. They had, in particular, a very great veneration for the traitor Judas, under the pretence that the death of Jesus Christ had saved mankind. They had also a forged gospel of Judas, to which they paid great respect.

CAIRNS, or CARNES, the vulgar name of those heaps of stones which are to be seen in many parts of Britain, particularly in Scotland and in Wales. They are composed of stones of all dimensions, thrown together in a conical form, a flat stone crowning the apex. Various causes have been assigned by the learned for these heaps of stones. They have been supposed to be, in times of inauguration, the places where the chieftain elect stood to show himself to best advantage to the people; or the spots from which judgment was pronounced; or erections by the way-side in honour of Mercury; or fabrics formed in memory of some solemn compact, particularly when accompanied by standing pillars of stones; or sites destined for the celebration of certain religious ceremonies. Such might have been the reasons, in some instances, where the evidences of stone chests and urns are wanting; but these are so generally found that they seem to leave little doubt that the most usual purpose of the piles in question was to serve as sepulchral monuments. But even this destination might render them suitable to other, particularly religious, purposes, to which by their nature they might be supposed to give additional solemnity. According to Toland, indeed, fires were kindled on the tops of flat stones, at certain periods of the year, particularly on the eves of the 1st of May and the 1st of November, for the purpose of sacrificing; at which time all the people having extinguished their domestic hearths, rekindled them from the sacred fires of the cairns. In general, therefore, these accumulations appear to have been designed for the sepulchral protection of heroes and great men. The stone chests, the repositories of the urns and ashes, are lodged in the earth beneath; sometimes only one, sometimes more, are found thus deposited; and Mr Pennant mentions an instance of seventeen having been discovered under the same pile.

Cairns are of different sizes, some of them very large. Mr Pennant describes one in the island of Arran, as 114 feet over, and of a vast height. They may justly be supposed to have been proportioned in size to the rank of the person, or to his popularity. The people of a whole district assembled to show their respect to the deceased; and, by actively honouring his memory, soon accumulated

Cairo. heaps equal to those that astonish us at this time. But these honours were not merely those of the day; as long as the memory of the deceased endured, not a passenger journeyed by without adding a stone to the heap. They supposed it would be an honour to the dead, and acceptable to his manes. To this day there is a proverbial expression among the Highlanders referable to the old practice; and a suppliant will tell his patron, "I will add a stone to your cairn;" meaning, "when you are no more, I will do all possible honour to your memory."

Cairns are to be found in all parts of the island, in Cornwall, Wales, and everywhere in North Britain. They were in use among the northern nations; and Dahlberg, in his 323d plate, has given the figure of one. In Wales they are called *carneddau*; but the proverb taken from them there is not of the complimentary kind: *Karn ar dy ben*, "a cairn on your head," is a token of imprecation.

CAIRO, or GRAND CAIRO, the capital of Egypt, situated in a plain at the foot of a mountain, in long. 32. 0. E. lat. 30. 0. N. It was founded by Jawhar, a Moggrebin general, in the middle of the tenth century. He gave his new city the name of *Al Kaira*, or the *Victorious*. It became the residence of the caliphs of Egypt, and of consequence the capital of that country, which it has ever since continued to be. It is divided into the new and old cities. Old Cairo, on the eastern bank of the Nile, is now almost uninhabited. The new city, which is properly Cairo, is seated in a sandy plain about two miles and a half from the old city, and on the same side of the river. It is extended along the mountain on which the castle is built, having been removed hither, it is supposed, in order to be under its protection. Bulac may be called the port of Cairo, for it stands on the bank of the Nile, and all the grain and other commodities destined for Cairo are landed there. Some travellers have assigned to Cairo a most enormous magnitude, by taking in the old city and Bulac along with the new; the real circumference of the latter, however, is not above ten miles, but it is extremely populous. The first thing that strikes a traveller is the narrowness of the streets, and the gloomy appearance of the houses, built of mud walls, without any exterior windows. Besides, as the streets are unpaved, and always full of people, walking is very inconvenient, especially to strangers. The number of the inhabitants has never been ascertained with any precision. Volney thinks it may amount to 200,000; but some later travellers estimate it as high as 300,000 or 400,000. The houses are from one to two or three stories in height, and flat at the top, where the inhabitants take the air, and often sleep all night. Those of the more wealthy have a court in the inside; but the poorer classes reside in very little space.

There is a canal, called *khalis*, derived from the Nile, which runs along the city from one end to the other, with houses on either side, which makes a large street. It forms in its progress several small lakes, which are called *birks* in the language of the country. The principal of these, which is in the great square near the castle, is five hundred paces in diameter. The most elegant houses in the city are built on its banks; but being filled from the inundation of the Nile, it contains water only for a few months of the year, and during the others it appears covered with a charming verdure. When there is water sufficient, it is always full of gilded boats, barges, and barks, in which people of rank amuse themselves by sailing, especially in the evenings, at which time there are curious fire-works, and a variety of music.

New Cairo is surrounded with stone walls, on which are handsome battlements; and at the distance of every hundred paces there are very fine towers. The walls were never very lofty, and are in many places gone to ruin.

The fortified palace built by Saladin seven hundred years ago, on part of the famous mountain Mokattan, is the only place of defence in Cairo; and yet the Turks took no notice of its falling, insomuch that it was becoming a heap of rubbish, till the present pasha gave it a thorough repair. The principal apartment in it was a magnificent hall, environed with twelve columns of granite, brought from the ruins of Alexandria, of a prodigious height and thickness, which sustained an open dome, under which Saladin distributed justice to his subjects; but in the repairs made upon the edifice it was judged necessary to demolish this part of it. From the palace the whole city of Cairo may be seen, and above thirty miles along the Nile, with the fruitful plains that lie near it, as well as the mosques, pyramids, villages, and gardens, with which these fields are covered. The present pasha, however, no longer resides there, but has removed to a still more splendid palace, which he has reared in the vicinity. It contains a pavilion two hundred and fifty feet by two hundred, each wall of which is adorned with colonnades of white marble. The pasha has founded a military college and other institutions, with the view of introducing European arts and improvements. The gates of Cairo are three, which are very magnificent. There are about three hundred public mosques in the city, some of which have six minarets. That of Sultan Hassan is the finest structure in modern Egypt, and is extremely light and elegant. There is in the neighbourhood an extensive necropolis, containing many splendid tombs, particularly one built by the pasha for his family, adorned with five spacious domes. The khans or caravanserais are numerous and large, with a court in the middle, like the houses of the people. Some of them are several stories high, and are always full of people and merchandise. Cairo is a great centre of the trade of interior Africa; and caravans at short intervals depart from it for Fezzan, Darfur, and other quarters. The slave market of Cairo exhibits natives brought from almost every region of that great continent.

Old Cairo has scarcely any thing remarkable except the granaries of Joseph; which are merely a high wall, lately built, including a square spot of ground where the owners of land deposit wheat, barley, and other grain, as tribute to the pasha. There is likewise a tolerably handsome church, which is made use of by the Copts, who are Christians, and the original inhabitants of Egypt. Over against old Cairo there is an apartment built above the river, into which the water is admitted, and a column, which has lines at the distance of every inch, marks at every two feet as far as thirty. When the water rises to twenty-two feet, it is thought to be of a sufficient height; when it rises much higher, it becomes very injurious. There is much pomp and ceremony used in letting the water into the khalis or canal which leads to Cairo. Joseph's well is in the fortified palace, and was made by King Mohammed about 700 years ago. It is so called, because the Egyptians attribute every thing extraordinary to that remarkable person. It is cut in a rock, and is two hundred and eighty feet in depth. The water is drawn up to the top by means of oxen, placed on platforms at proper distances, which turn about the machines that raise it. The descent is so sloping, that, though there are no steps, the oxen can descend and ascend with ease. The inhabitants of Cairo are a mixture of Moors, Turks, Jews, Greeks, and Copts.

CAIRO, a town of Italy, in the province Mondovi, of the kingdom of Sardinia. It is situated on the river Bormida, and contains 4000 inhabitants.

CAIRO, a town of Italy, in the province Mortara, of the kingdom of Sardinia, at the junction of the Agogna with the Po. It contains 1460 inhabitants.

Cairoan
||
Caithness.

CAIROAN, or **CAIRWAN**, a city of Africa, in the kingdom of Tunis, seated in a sandy barren soil, about five miles from the Gulf of Capres. It has neither spring, well, nor river; for which reason they are obliged to preserve rain water in tanks and cisterns. It was built by the Aglabites, and was once the seat of a considerable kingdom, but it is now much decayed. There is still, however, a very superb mosque, and the tombs of the kings of Tunis are yet to be seen. Long. 9. 12. E. Lat. 35. 40. E.

CAISSON, in the military art, a wooden chest, into which several bombs are put, though it is sometimes filled only with gunpowder. This is buried under some work of which the enemy intend to possess themselves, and when they are masters of it, is fired in order to blow them up.

CAISSON is also used for a wooden frame or chest used in laying the foundations of the piers of a bridge.

CAISTOR, a market-town in the hundred of Yarborough and county of Lincoln. It is joined by a canal to the town of Glanford Brigg. It is a place of great antiquity, said to have been built by the Saxon Hengist. The town is supplied with water by four springs, whose streams, after passing through it, unite and form the river Ancolm. It is 157 miles from London. The market is held on Monday. The inhabitants amounted in 1811 to 1051, in 1821 to 1253, and in 1831 to 1525.

CAITHNESS is the most northern county of Scotland. It is bounded on the north by the Pentland Frith, which separates it from the Orkney Islands; on the east and south-east by the Moray Frith; on the south and south-west by Sutherlandshire; and on the west by the Northern Ocean. A chain of hills, commencing on the east at the Ord, runs along the division between Sutherland and it. One of these, Morven, rises to an elevation of 1929 feet. The Burn of the Ord forms the true boundary between the two counties on the east side; and a line drawn across the hill of Drumholliston, on the east of the river Halladale, constitutes that on the west coast. The form of the county is an irregular triangle, measuring along the eastern coast from Duncansbay-head to the Ord about forty miles, and from Duncansbay-head along the northern shore to Bighouse on the west, about thirty-five miles. No accurate map of the county has yet been constructed; but it is supposed to contain about 650 square miles. There are ten parishes of very unequal extent, the least being four miles long and two broad; the largest twenty-seven miles by ten or twelve. The coast nearly along the whole line is rocky and precipitous, with deep water to the edge of the rock, and at Dunnet-head it rises to the height of 340 feet. It is remarkable for a number of bold headlands. The principal of these are Sandside-head on the west; Holburn-head, Dunnet-head, Duncansbay-head, Noss-head, and Clythness. Dunnet-head is the most northerly land on the mainland, lying in long. 3. 29. E. and lat. 58. 42. N. Near Duncansbay-head lies John o' Groat's, commonly considered the most northern point; but it is two miles farther south than Dunnet-head.

There are several bays along the coast. Sandside Bay lies on the east of the head of that name. It is open, and not safe for shipping in particular winds. On the east of Holburn-head, and sheltered by it, lies Thurso Bay, having Scrabster roadstead close to the head, affording the most secure anchorage on a stiff blue clay bank sloping outwards. Dunnet Bay is much exposed to the north, and dangerous for shipping, being often mistaken for the entrance to the frith; the low sands lying at its bottom not being observable in a dark night till close at hand. Last year a light-house was finished on Dunnet-head, by which this danger is obviated. The light stands 346 feet above the sea. Riess Bay, or Sinclair's Bay, bounded on

the east by Noss-head, is also an exposed bay from the north-east; but in certain winds it affords good anchorage. Wick Bay, at the bottom of which stands the town of that name, is small, and very unsafe with the wind high from the east and south-east, a heavy sea then rolling in. The tide in the Pentland Frith runs, at spring tides, at the rate of nine miles an hour; and, when opposed by a strong wind, raises a very heavy sea. Within two miles of the shore, off Duncansbay, lies the island of Stroma, about a mile long, round which the tides form several eddies. Off the point of Mey, a few miles farther west, there is an eddy of considerable strength, called the Merry Men of Mey, into which boats are sometimes in danger of being drawn. The navigation of the frith requires the aid of a pilot, unless the crew of the ship are well acquainted with it.

The county is generally level, or swelling into slight elevations, with very few hills, which are chiefly on the west side. It is well watered with rivers, brooks, and lochs, and seldom suffers from drought. The climate is variable. On an average of eight years, the number of days of more or less rain in each month is as follows:

Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
14	12	15	15	15	16	19	19	16	19	16	17

making for the whole year 193 days.

The average of days with snow is as follows:—

January.	February.	March.	April.	October.	November.	December.
7½	7	7½	4	2	5	3½

Instances of snow in May have occasionally occurred, as in May 1831, when there were four days of snow and heavy wind, which destroyed the prospect of small fruit.

The average of days of frost stands thus:

January.	February.	March.	April.	October.	November.	December.
8	7½	4½	2	1	4½	7½

In the summer and harvest, frost frequently occurs at night. Rain, snow, and frost, frequently occur on the same day during the winter.

The range of the barometer is very extensive, sometimes two inches and more; yet the climate is in general healthy. The soil is various, from black and clay loam to light sandy, in general yielding abundant crops of oats and bear, of which large quantities are exported. Wheat is also grown, but in small quantities, and also peas and beans. The subsoil is almost throughout clay upon clay slate rock. Whinstone and sandstone also occur. Dunnet and Duncansbay-heads are composed of rough sandstone of a red colour. A white sandstone is found in abundance in the interior of Dunnet-head, and in other places on the coast of the Pentland Frith. Granite is found in mass in the Berridale Hills. A good deal of an inferior limestone also occurs, and shell marl in great abundance. Traces of various metallic minerals have been found. A lead vein was discovered at Skinnet, near Thurso, and copper at Old Wick, near Wick, but neither was of any value. Bog-iron also occurs.

Great numbers of black cattle are reared for home use and sale. Many thousands were annually sent south, but of late years the demand has been very dull. A curious kind of traffic exists between the Caithness and Orkney people. Annually a number of colts, one or two years old, are sent into the islands, which return a proportional number of horses from five to eight years old. This practice has existed from time immemorial.

There are few trees in the county; but experience has shown that they would thrive if proper care were employed to protect them when young. The trunks of large trees are often found in the mosses which abound in this county, and which yield the chief part of the fuel used by the people. Coals, principally English, are also now much in use. Partridges, hares, rabbits, grouse, plovers, &c.

Caithness. abound; and there are some black-cock around Berridale and Langwell. Formerly great flocks of a bird larger than the sparrow, called the snow-fowl, visited this county in the winter season; but for some years past they have scarcely been seen. The rocks are frequented by eagles, hawks, and a variety of sea-fowl, which breed in great numbers.

The rivers and lochs afford trout, salmon, and eels; and the sea yields abundance of cod, haddocks, and other kinds of fish. The salmon fishery is not now so successful as formerly. The herring fishery has of late years been very prosperous. Wick is the principal station. On an average of eleven years ending in 1830, there have been caught 100,000 barrels annually. There were 134 curers, employing 736 boats, 3564 fishers, 384 coopers, 239 labourers, and 2455 women. In 1830 about 153,000 barrels were taken. But the fishing of 1831 was not so productive. The quantity caught at other stations along the coast may amount to 40,000 or 50,000 more.

The population amounted at last census (1831) to 34,500, including Wick, Pulteneytown, and Thurso. In 1801 it was 22,609. The people are hardy and industrious. Their condition as cultivators of the ground has materially improved within the last forty years. Formerly they were oppressed with the exaction of personal services by the landlords. These consisted of labour on the lands in the natural possession of the proprietors, ploughing, sowing, cutting, and gathering in the crops; furnishing straw, fuel, fowls, eggs, &c.; shipping grain, and other services, which are now almost entirely abolished, and money payments substituted. Still they labour under several disadvantages, the principal of which are want of leases and too high rents. In general the rents, especially on the coast, are high; nor could the tenants pay them, but for their traffic in cattle, and the herring fishery. The improvement in agriculture has been very great within the last forty years. At the beginning of that period artificial or sown grasses and turnips were commodities possessed by few; now both are common, and their value is duly appreciated. A regular system of rotation of crops is pursued on all farms of any size; and the breed of working horses is greatly improved. The real rent of the county, which has increased to nearly one half within the last thirty years, exceeds L.61,000. On some estates the rents are payable partly in money, partly in meal and bear.

Wick is the head burgh of the shire. It was erected into a royal burgh in 1589, in favour of the Earl of Caithness. But the superiority came into the possession of Sir John Sinclair, and was lately purchased by the Marquis of Stafford. Including Louisburgh, it contains 2269 inhabitants, and perhaps has made more rapid advances in improvement and extent of trade within the last twenty years than any other place of the same size in the empire. In the foreign trade of last year (1831) fifty vessels and 4072 tons of shipping were employed, while in the coasting trade there have been generally about 500 vessels and 35,000 tons likewise annually engaged. The chief imports are timber, hemp, iron, and tar, while the exports consist chiefly of fish.

The settlement of Pulteneytown, on the south side of the river of Wick, has sprung up entirely from the herring fishery. The first house was built only twenty-two years since, and now the town contains 2845 inhabitants. The ground was purchased from Lord Duffus, then Sir B. Dunbar, by the British Fishery Society, who derive a large income from the feu-duties, and the harbour dues of a large and secure port, lately completed at an expense of L.40,000.

The town of Thurso is of great antiquity, and was erected into a burgh of barony in 1633. It has 2364 inhabitants.

The antiquities of this county consist of old castles, and Picts' cairns. The former are nearly all on the coast, and on bold projecting points. The ruins of Castle Sinclair, anciently called Girnago, the residence of the earls, are situated on a tongue of lofty rock on the west side of Noss-head, and within Ricess Bay. The castle of Kiess stands on the opposite side of the bay. The castle of Old Wick, to the south of the town, is known to mariners as the Old Man of Wick, and is a noted land-mark. The Bishop of Caithness, whose see included Sutherland, had a castle at Scrabster, a short distance west of Thurso. There are ruins of castles also at Forse, Latheron, and Berridale, and in the interior at Braal, Dirlet, and Lochmore, along the river Thurso. The only habitable castles are those of Mey, Ackergill, and Dunbeath.

The Picts' cairns are scattered over the face of the country, generally on the slopes of rising grounds. They are very numerous, and it has been remarked that there are at least three always in sight of one another. They were probably the houses of the richer inhabitants, the lower classes lodging in more perishable huts of turf, as many of them still do.

The names of places are generally of Danish origin; and a number of them end in *ster*, which signifies a station or estate. The language spoken by the people is the same as that of the south of Scotland, except in the parts bordering on Sutherland, where Gaelic is still in use, though giving place to English.

The ancient history of this county is, as might be expected, very obscure. What is known of it is little more than a record of petty quarrels, strifes, robberies, and bloodshed, as in other parts of Scotland in the same times.

The aborigines were the Picts, who were subdued and their possessions seized by the Norwegians, a kindred race, in the beginning of the tenth century. At the same time they took possession of the Orkneys. Their chiefs, under the title of Iarl or Earl, ruled Caithness and Orkney down to the beginning of the fourteenth century, when the direct line ceased in the person of Magnus. For a century the succession was unsettled and disputed. In 1456 the first of the family of Sinclair became earl. In the end of the seventeenth century the property of the earldom was alienated, and acquired by Glenorchy, afterwards Lord Breadalbane, who sold it to various persons; so that the present family succeeded to nothing but the title.

The county formerly sent a representative to Parliament alternately with Bute. But under the alteration which has just been made on the representation of Scotland, it will have a representative for itself, to which indeed it is well entitled from its population and rapid increase in importance.

Great improvements have been made in the county since the money wisely appropriated by government from the price of the forfeited estates has been expended in the Highlands in making roads and bridges. By that appropriation the recesses of the north have been opened up, and communication with the other end of the island rendered easy; the mail-coach now travelling through tracts where a Highland pony, twenty years ago, could only make his way. Valuable tracts of land have in consequence been brought into a state of high cultivation, and lime from Sutherland conveyed into the interior for that purpose. An impulse has been given to the spirit of improvement; and so much has the benefit arising from roads been valued by the inhabitants of this northern county, that the proprietors and tenants have lately procured an act of parliament for assessing themselves for the price of making 180 miles of additional roads. By this public-spirited measure great benefits must ere long arise to

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Cajare.

the district; and within a short period, it is not doubted that fine fields and modern farm-steadings will be seen in districts at present comparatively uncultivated and unknown.

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YEARS.	HOUSES.			OCCUPATIONS.			PERSONS.		
	Inhabited.	By how many Families occupied.	Uninhabited.	Families chiefly employed in Agriculture.	Families chiefly employed in Trade, Manufactures, or Handicraft.	All other Families not comprised in the two preceding classes.	Males.	Females.	Total of Persons.
1811	4301	4714	139	3270	838	606	10,608	12,811	23,419
1821	5319	5944	39	3052	2188	704	14,196	16,042	30,238
1831	.....	.....	.....	.....	.....	.....	.....	.....	34,500

CAIUS, KAYE, or *Keye*, DR JOHN, the founder of Caius College in Cambridge, was born at Norwich in 1510. He was admitted very young a student in Gonville Hall in the above-mentioned university; and at the age of twenty-one translated from Greek into Latin some pieces of divinity, and into English Erasmus's paraphrase on Jude, and other works. From these his juvenile labours, it seems probable that he first intended to prosecute the study of divinity. But be this as it may, he travelled into Italy, and at Padua studied physic under the celebrated Montanus. In that university he continued some time, where we are told he read Greek lectures with great applause. In 1543 he travelled through part of Italy, Germany, and France; and returning to England, commenced doctor of physic at Cambridge. He practised first at Shrewsbury, and afterwards at Norwich; but removing to London in 1547, he was admitted fellow of the college of physicians, of which he was several years president. In 1557, being then physician to Queen Mary, and in great favour, he obtained a license to advance Gonville-hall, where he had been educated, into a college, which he endowed with several considerable estates, adding an entire new square at the expense of L.1834. Of this college he accepted the mastership, which he held till within a short period of his death. He was physician to Edward VI., Queen Mary, and Queen Elizabeth. Towards the latter end of his life he retired to his own college at Cambridge, where having resigned the mastership to Dr Legge of Norwich, he spent the remainder of his life as a fellow commoner. He died in July 1573, aged sixty-three, and was buried in the chapel of his own college. Dr Caius was a learned, active, and benevolent man. In 1557 he erected a monument in St Paul's, to the memory of the famous Linacre. In 1563 he obtained a grant for the college of physicians to take the bodies of two malefactors annually for dissection; and he was the inventor of the *insignia* which distinguish the president from the rest of the fellows. He wrote, 1. *Annals of the College from 1555 to 1572*. 2. *Translation of several of Galen's works*, printed at different times abroad. 3. *Hippocrates de Medicamentis*; first discovered and published by our author; also *De Ratione Victus*, Lov. 1556, 8vo. 4. *De Medendi Methodo*, Basel, 1554; Lond. 1556, 8vo. 5. *Account of the Sweating Sickness in England*, Lond. 1556, 1721. It is entitled *De Ephemera Britannica*. 6. *History of the University of Cambridge*, Lond. 1568, 8vo; 1574, 4to, in Latin. 7. *De Thermis Britannicis*; but it is doubtful whether this work was ever printed. 8. *Of some Rare Plants and Animals*, Lond. 1570. 9. *De Canibus Britannicis*, 1570, 1729. 10. *De Pronunciatione Græcæ et Latinæ Linguae*, Lond. 1574. 11. *De Libris propriis*, Lond. 1570. Besides many other works which never were printed.

CAJARE, a market-town of the department of the Lot, in France, on the right bank of the Dordogne, with 1912 inhabitants.

CAJAZZO, a city of Italy, in the province Terra di Lavoro, of the kingdom of Naples, near the Volturno. It has a cathedral, several other churches, and 2765 inhabitants.

CAJETAN, CARDINAL, was born at Cajeta, in the kingdom of Naples, in the year 1469. His proper name was Thomas de Vio, but he adopted that of Cajetan from the place of his nativity. He defended the authority of the pope, which had suffered greatly at the council of Nice, in a work entitled *Of the Power of the Pope*; and for this work he obtained the bishopric of Cajeta. He was afterwards raised to the archiepiscopal see of Palermo, and in 1517 was made a cardinal by Pope Leo X. The year after, he was sent as legate into Germany, to quiet the commotions raised against indulgences by Martin Luther; but Luther, under protection of Frederic elector of Saxony, set him at defiance; for though he obeyed the cardinal's summons in repairing to Augsburg, yet he rendered all his proceedings ineffectual. Cajetan was employed in several other negotiations and transactions, being as ready in business as in letters. He died in 1534. He wrote commentaries upon Aristotle's philosophy, and upon Thomas Aquinas's theology; and made a free translation of the Old and New Testaments.

CAJUPUT OIL, a volatile oil obtained by distillation from a species of melaleuca, which has lately obtained the name of *melaleuca cajuputi*; cajuputi being its Malay name. This tree, or rather shrub, is a native of the island of Amboyna, and of the southern part of Borneo. Cajuput oil is prepared from the leaves which are collected in a hot dry day, macerated in water, and distilled after fermenting for a night. Five bags of the dried leaves, it is said, are required to produce one ounce of the oil, which when distilled is limpid; but being generally transported to Europe in copper vessels, attains a greenish colour. When imported in glass bottles, it is perfectly pellucid. As the real cajuput oil is high priced, it is much exposed to adulteration.

Cajuput oil should be free from colour, or of a bluish green: it is extremely pungent to the taste, and has the odour of a mixture of turpentine and camphor. When dropped in water, it diffuses itself over its surface, and then entirely evaporates. It should burn without leaving any residuum. It is very soluble in alcohol, and sparingly so in water. Like other volatile oils, the cajuput is a powerful stimulant, and is used medicinally where such medicines are required. Some practitioners have given it a high character as a remedy for the pestilence which is at present ravaging Europe. It does not appear, however, to have any claim as a specific in the treatment of cholera. The dose taken internally is about five drops. It is used externally as a rubefacient, and is also resorted too occasionally with advantage in toothach.

CAKE, a finer sort of bread, so denominated from its flat round figure.

Calabash || **Calabria.** The Hebrews had several sorts of cakes, which they offered in the temple. These were made of the meal either of wheat or barley, and were kneaded sometimes with oil and sometimes with honey; though sometimes they only rubbed them over with oil when they were baked, or fried them with oil in a frying-pan upon the fire. In the ceremony of Aaron's consecration, they sacrificed a calf and two rams, and offered unleavened bread, and cakes unleavened tempered with oil, and wafers unleavened anointed with oil; the whole being made of fine wheaten flour.

CALABASH, in *Commerce*, a light kind of vessel formed of the shell of a gourd emptied and dried, serving to put divers kinds of goods in, as pitch, rosin, and the like. The word in Spanish, *calabaça*, signifies the same.

CALABRIA CITERIORE, one of the southern provinces into which the kingdom of Naples, in Italy, is divided. It is bounded on the south by Calabria Ulteriore, on the east by the Ionic Sea, on the north by Basilicata, and on the west by the Mediterranean. Its extent is 3652 square miles, or 2,337,280 English acres. The Appenines are continued into this province, but are inferior to the height they attain in Abruzzo. In the south the mountains of Silla extend over more than 220 square miles. The province is watered by numberless small streams, whose course is short, and commonly rapid. The climate is mild, and, except on the mountains, the snow never remains. The productive power of the soil is very various, but it yields sufficient corn for the inhabitants. The products are wheat, barley, beans, maize, rice, flax, and hemp; besides cotton, tobacco, saffron, liquorice, and wine of great strength. Oil and silk are also produced. The fishery is an important means of affording employment to numerous persons, who catch large quantities of the tunny, and of sardinias. There are scarcely any roads through the province, and of the few, some are nearly impassable; consequently there is little internal traffic. What little external commerce exists, centres in the capital Cosenza. The number of inhabitants, by a census of 1793, appeared to be 345,532; but in 1807, by the product of a tax on fire-places, the population was estimated at 374,000. It is divided into four districts, viz. Cosenza, Rossano, Amantea, and Castrovillari.

CALABRIA ULTERIORE, a province of the Neapolitan kingdom of Italy. It is usually divided into two parts, numbered one and two, but these are here described together. The province is a peninsula, bearing a resemblance to the foot of the boot to which the map of Italy has been likened. It is surrounded by the sea, except on the north, where it is bounded by Calabria Citeriore. The extent is 3388 square miles, or 2,178,320 English acres.

Although the continuation of the ridge of the Appenines is obvious throughout the whole province, yet their elevation generally decreases towards the south. The soil is generally fertile; and the heat of the climate makes it a kind of forcing house as compared with the other parts of Italy. Snow and ice are scarcely known; and the aloe and date trees come to perfection in the open air. In summer, however, the whole province is burnt up, and the sirocco extends the scorching breath of Africa over all the land. The products are wheat, maize, barley, beans, rice, cotton, buck-wheat, sugar-canes, tobacco, licorice, and melons, with other fruits. Besides these, much silk of an excellent quality is raised; and pitch, tar, and turpentine, are made from the trees. The sheep and other cattle are by no means so abundant as in the other Calabria. There are marks of gold, silver, lead, and copper, but no mines are worked of any of these metals. Manufactures are at a low ebb, and confined to silk and wool. There are a few coasting vessels, and some fishing vessels belonging to the Calabrese, but there is no foreign trade. The whole population of the province amounts to about 450,000 individuals.

CALABRITTO, a city of Italy, in the Neapolitan province Principato-Citeriore, with 2160 inhabitants.

CALAHORRA, a town of Spain, in the province of Old Castile, and in the district of Soria. It was a city of considerable distinction in past ages, and the vestiges of its grandeur are still visible around it. The vicinity of the place yields a considerable quantity of fine wool. It is on the banks of the little river Yregua, which falls into the Ebro. It is the seat of a bishop, and contains 7200 inhabitants; and there is a beautiful bridge of ten arches over the river. This town was the birth-place of Quintilian.

CALAIS, a city of the arrondissement of Boulogne, and department of Calais, in France. It is a place of importance from being the nearest point to England, and the landing place of those who pass from thence to the Continent. The harbour, which is dry at low water, is only fit for the reception of small vessels. It is fortified strongly both on the land and sea sides. The walls form a pleasing, and indeed the only promenade. It is well built, with a good square, and with streets leading from it in straight lines. It contains 900 houses, besides barracks; and the inhabitants amount to 8500. The place suffers from want of good water.

CALAIS, PAS DE, one of the departments of France, on the sea coast. It is bounded on the north by the British Channel, on the north-east by the department of the north, on the south by that of the Somme, and on the west by the Channel. It extends over 2596 square miles, and is divided into six arrondissements, and these are subdivided into forty-three cantons and 953 communes. The population amounts to 584,650. It is generally a level district, near the sea-coast, rather marshy, but remarkable for excellent pasture and dairy land. The greater portion of the land is under the plough, and is well cultivated on the Flemish system. The department is abundantly supplied with water, which is applied both to purposes of navigation and of irrigation. With a few exceptions, it is by far the best cultivated of any part of France, and in the greater part of the arrondissements of Arras, Bethune, and St Omer, it is scarcely possible to find a spot of land not highly productive. Green crops are abundantly raised, and the dung from the animals fed on them provides abundant manure for the corn land; while the mode of ploughing the land and furrowing it operates to prevent injury from too much rain. It is a manufacturing as well as an agricultural district. Woollen, linen, and cotton goods, hosiery, lace, leather, earthenware, beer, corn, spirits, paper, hats, and soap, are extensively produced, besides flax, hemp, and linseed oil. There are considerable fisheries on the sea-coast and in the several rivers.

CALAIS, St, an arrondissement in the department of the Sarthe, in France, extending over 465 square miles. It is divided into six cantons, and these again into sixty communes, containing 66,330 inhabitants. The chief place is a city of the same name, on the river Anille, in an unfruitful spot, containing 3646 inhabitants, occupied in manufacturing serges, flannels, and some kinds of linen goods.

CALAMANCO, a sort of woollen stuff manufactured in England and Brabant. It has a fine gloss, and is checked in the warp, whence the checks appear only on the right side. Some calamancoes are quite plain, others have broad stripes adorned with flowers, others plain broad stripes, others narrow stripes, and others are watered.

CALAMIANES, a group of small islands in the Eastern Seas, about twelve in number, and situated to the north and north-east of the Philippines. They are surrounded by numerous shoals and rocks, which render the navigation intricate and dangerous. The largest of these islands are called Busvagon and Calamiane, and the latter is about twenty-three miles in length by five in breadth;

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Calamine
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Calamy.

the whole constituting a province under its name, which is divided between the Sultan of Borneo and the Spaniards. There are besides numerous tribes of natives who dwell in the interior parts, without chiefs or established laws. The island produces the edible birds-nests which the Chinese consider as so great a delicacy, and it trades besides in rice, honey, and wax. Pearls are found on the coast. Long. 120. 20. E. Lat. 12. N.

CALAMINE, the native carbonate and silicate of zinc, which, though very generally found in the same deposits, differ materially both in their mineralogical and chemical characters. The most prevalent colour of Calamine is white; occasionally, however, it is blue, green, yellow, or brown. It varies also from transparent to opaque; has a vitreous lustre; and occurs both crystallized, stalactitic, mamillated, and massive. It is frequently found in veins, associated with blende, and ores of iron and lead. Considerable quantities occur at Bleiberg and Raibel in Carinthia, Tarnowitz in Silesia, Altenberg near Aix-la-Chapelle, in the Mendip-hills of Somersetshire, at Wanlockhead in Dumfriesshire, and at Alston Moor in Cumberland. It is a very useful ore of zinc, containing generally from sixty to seventy per cent. of that metal. For further particulars see MINERALOGY.

CALAMOTA, an island on the coast of the Austrian kingdom of Dalmatia, in the Adriatic Sea. It is a little to the west of Ragusa, and contains only one town, or rather large village.

CALAMUS, in the ancient poets, denotes a simple kind of pipe or fistula, the musical instrument of the shepherds and herdsmen, and usually made either of an oaten stalk or a reed.

CALAMUS *Scriptorius*, in antiquity, a reed or rush to write with. The ancients made use of styles to write on tables covered with wax, and of reed or rush to write on parchment or Egyptian paper.

CALAMY, EDMUND, an eminent Presbyterian divine, born in London in the year 1600, and educated at Pembroke Hall, Cambridge, where his attachment to the Arminian party excluded him from a fellowship. Dr Felton, bishop of Ely, however, made him his chaplain; and in 1639 he was chosen minister of St Mary Aldermary, in the city of London. Upon the opening of the long parliament he distinguished himself in defence of the Presbyterian cause, and had a principal hand in writing the famous *Smectymnus*, which, he himself says, gave the first deadly blow to Episcopacy. The authors of this tract were five, the initials of whose names formed the name under which it was published, viz. Stephen Marshal, Edmund Calamy, Thomas Young, Mathew Newcomen, and William Sparstow. He was afterwards an active member in the assembly of divines, and a strenuous opposer of sectaries; and he used his utmost endeavours to prevent the violences which were committed after the king was brought from the Isle of Wight. In Cromwell's time he lived privately, but was assiduous in promoting the king's return; for which he was afterwards offered a bishopric, but refused it. He was ejected for nonconformity in 1662, and died of grief at the sight of the great fire of London.

CALAMY, Edmund, grandson to the preceding (by his eldest son, Mr Edmund Calamy, who was ejected from the living of Moxton in Essex, on St Bartholomew's day 1662), was born in London on the 5th April 1671. After having learned the languages, and gone through a course of natural philosophy and logic at a private academy in England, he studied philosophy and civil law at the university of Utrecht, and attended the lectures of the learned Grævius. Whilst he resided there, an offer of a professor's chair in the university of Edinburgh was made him

by Mr Carstairs, principal of that university, sent over on purpose to find a person properly qualified for such an office. This he declined, and returned to England in 1691, bringing with him letters from Grævius to Dr Pococke, canon of Christ-church, and regius professor of Hebrew, and to Dr Bernard, Savilian professor of astronomy, who obtained leave for him to prosecute his studies in the Bodleian Library. Having resolved to make divinity his principal study, he entered into an examination of the controversy between the conformists and nonconformists, which determined him to join the latter, and, coming to London in 1692, he was unanimously chosen assistant to Mr Matthew Sylvester at Blackfriars; and in 1694 he was ordained at Mr Annesley's meeting-house in Little St Helena, and soon afterwards was invited to become assistant to Mr Daniel Williams in Hand-Alley. In 1702 he was chosen one of the lecturers in Salters Hall; and in 1703 he succeeded Mr Vincent Alsop as pastor of a great congregation in Westminster. He drew up the table of contents to Mr Baxter's History of his Life and Times, which was sent to the press in 1696; made some remarks on the work itself, and added to it an index; and, reflecting on the usefulness of the book, he saw the expediency of continuing it, as Mr Baxter's history came no lower than the year 1684. Accordingly he composed an abridgment of it, with an account of many other ministers who were ejected after the restoration of Charles II.; their apology, containing the grounds of their nonconformity and practice as to stated and occasional communion with the church of England; and a continuation of their history until the year 1691. This work was published in 1702. He afterwards published a moderate defence of nonconformity, in three tracts, in answer to some tracts of Dr Hoadley. In 1709 Mr Calamy made a tour to Scotland, and had the degree of doctor of divinity conferred on him by the universities of Edinburgh, Aberdeen, and Glasgow. In 1713 he published a second edition of his Abridgment of Mr Baxter's History of his Life and Times; in which, among various additions, there is a continuation of the history through King William's reign and Queen Anne's, down to the passing of the occasional bill; and in the close is subjoined the reformed liturgy, which was drawn up and presented to the bishops in 1661, "that the world may judge," as he says in his preface, "how fairly the ejected ministers have been often represented as irreconcilable enemies to all liturgies." In 1718 he wrote a vindication of his grandfather, and several other persons, against certain reflections cast upon them by Mr Archdeacon Echard in his History of England; and in 1728 appeared his continuation of the account of the ministers, lecturers, masters, and fellows of colleges, and schoolmasters, who were ejected, after the Restoration in 1660, by or before the act of uniformity. He died on the 3d of June 1732, greatly regretted, not only by the dissenters, but also by the moderate members of the established church, both clergy and laity, with many of whom he lived in great intimacy. Besides the pieces already mentioned, he published a great many sermons on several subjects and occasions. He was twice married, and had thirteen children.

CALANORE, the chief town of a small district of the same name in Hindustan, province of Lahore. Acbar was here first proclaimed emperor on the death of his father in 1556. Long. 75. 0. E. Lat. 31. 51. N. The district is situated in the Sikk territories, between the 31st and 32d degrees of north latitude.

CALAS, JOHN, the name of a most unfortunate Protestant merchant at Toulouse, inhumanly butchered under forms of law which were prostituted to shelter the sanguinary dictates of ignorant and fanatical zeal. He had

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Calamy.

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lived forty years at Toulouse. His wife was an English-woman of French extraction, and they had five sons, one of whom, Louis, had turned Catholic through the persuasions of a Catholic maid who had lived thirty years in the family. In October 1761 the family consisted of Calas, his wife, Mark Antony their son, Peter their second son, and this maid. Antony was educated for the bar; but being of a melancholy turn of mind, was continually dwelling on passages from authors on the subject of suicide, and one night in that month hanged himself on a bar laid across two folding doors in the shop. The crowd collected by the confusion of the family on so shocking a discovery took it into their heads that he had been strangled by the family to prevent his changing his religion, and that this was a common practice among Protestants. The officers of justice adopted the popular tale, and were supplied by the mob with what they accepted as conclusive evidence of the fact. The fraternity of White Penitents got the body, buried it with great ceremony, and performed a solemn service for him as a martyr; the Franciscans did the same; and after these formalities no one doubted the guilt of the devoted heretical family. Being all condemned to the torture in order to bring them to confession, they appealed to the parliament; but this body, being as weak and as wicked as the subordinate magistrates, sentenced the father to the torture, ordinary and extraordinary, to be broken alive upon the wheel, and then to be burnt to ashes; a diabolical decree, which, to the shame of humanity, was actually carried into execution. Peter Calas, the other son, was banished for life; and the rest were acquitted. The distracted widow, however, found some friends, and among these Voltaire, who laid her case before the council of state at Versailles; and the parliament of Toulouse was ordered to transmit the proceedings. These the king and council unanimously agreed to annul; the chief magistrate of Toulouse was degraded and fined; old Calas was declared to have been innocent; and every imputation of guilt was removed from the family, who also received from the king and clergy considerable gratuities.

CALASCIBETTA, a city of the intendency of Calatanisetta, in the island of Sicily, in the defile between two mountains, on the river Nebroden. It contains 4780 inhabitants.

CALASH, or **CALESH**, a small light kind of chariot or chair, with very low wheels, used chiefly for taking the air in parks and gardens.

CALASIO, **MARIUS**, a Franciscan, and professor of the Hebrew language at Rome, of whom there is very little to be said, but that he published there, in the year 1621, a concordance of the bible, which consisted of four great volumes in folio. This work has been highly approved and commended both by Protestants and Catholics, and is indeed a most admirable work; for, besides the Hebrew words of the bible, which compose the body of the book, with the Latin version over against them, there are in the margin the differences between the Septuagint version and the Vulgate; so that at one view may be seen wherein the three bibles agree, and wherein they differ. Moreover, at the beginning of every article there is a kind of dictionary, which gives the signification of each Hebrew word; affords an opportunity of comparing it with other oriental languages, viz. with the Syriac, Arabic, and Chaldee; and is extremely useful for determining more exactly the true meaning of the Hebrew words.

CALASIRIS, in antiquity, a linen tunic fringed at the bottom, and worn by the Egyptians under a white woolen garment; but this last they were obliged to pull off when they entered the temples, being only allowed to appear there in linen garments.

CALATAFINI, a city of Sicily, in the intendency of Trapani. It is between two hills, in a fine corn country,

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containing 10,000 inhabitants. This district is celebrated for its dairy and breeding cattle.

CALATANISETTA, one of the intendancies into which the island of Sicily is divided. It is bounded on the north by Palermo, on the east by Catania, on the south-east by Seragosa, on the south by the sea, and on the west by Girgenti. It is divided into three districts, viz. Calatanisetta, Piazza, and Terranova, and contains 155,225 inhabitants.

CALATANISETTA, a city, the capital of the intendency and district of the same name, in the island of Sicily. It is situated in an extensive and fertile plain, on a healthy spot, has broad streets and good buildings, and contains 2800 houses, with 15,627 inhabitants, who are chiefly employed in making linen cloth.

CALATAYUD, a small city of Spain, in the province of Aragon. It is situated on the river Xalon, a little below its junction with the Xiloca, in a fertile valley, which produces abundantly olives, grasses, and melons. The ruins of the ancient city of Bilbilib, the native place of the poet Martial, are to be seen near Calatayud. This city contains 1500 houses and 9000 inhabitants, three tanneries, and twelve soap-boiling houses. There is annually raised here 20,000 hundredweight of hemp.

CALATHUS, in antiquity, a kind of hand-basket made of light wood or rushes, used by the women sometimes to gather flowers, but chiefly, after the example of Minerva, to put their work in. The figure of the calathus, as represented on ancient monuments, is narrow at the bottom, but widens upwards like that of a top. Pliny compares it to that of a lily. The calathus or work-basket of Minerva is no less celebrated among the poets than her distaff.

CALATHUS was also the name of a wine-cup used in sacrifices.

CALATOR, in antiquity, a crier, or officer appointed to publish something aloud, or call the people together. The word is formed from *καλεω, voco*, "I call." The pontiffs had such ministers, whom they used to send before them when they went to sacrifice on *feriæ* or holidays, in order to advertise the people to leave off work. The magistrates also used *calatores*, to call the people to the comitia, both *curiata* and *centuriata*. The officers in the army also had *calatores*; as had likewise many private families, to invite their guests to entertainments.

CALATRAVA, a small town of Spain, in New Castile, situated on the river Guadiana, from which a well-known order of knights take their title. Long. 3. 20. W. Lat. 39. 4. N.

Knights of CALATRAVA, a military order in Spain, instituted by Sancho III. king of Castile, upon the following occasion. When that prince took the strong fort of Calatrava from the Moors of Andalusia, he gave it to the Templars, who, wanting courage to defend it, returned it to him again. Then Don Raymon, of the order of the Cistercians, accompanied with several persons of quality, made an offer to defend the place, which the king thereupon delivered up to them, and instituted that order. It increased so much under the reign of Alphonso, that the knights desired they might have a grand master, which was granted. Ferdinand and Isabella, with the consent of Pope Innocent VIII., afterwards reunited the grand mastership of Calatrava to the Spanish crown, so that the kings of Spain became perpetual administrators of this office.

The knights of Calatrava bear a cross gules, fleur-de-lised with green. Their rule and habit were originally those of the Cistercians.

CALAURIA, in *Ancient Geography*, an island of Greece, in the Saronic bay, over against the port of Troezen, at

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Calauria.

Calayan the distance of forty stadia. Hither Demosthenes went twice into banishment, and here he died.

Calcedony. **CALAYAN**, a small island in the Pacific Ocean, and the most northerly of those called the Babuyan islands. It is situated due north of the large island of Luzon, and is about twenty-three miles in circumference. Long. 121. 30. E. Lat. 19. 28. N.

CALATVOTURA, a city of Italy, in the intendency of Palermo, in the island of Sicily. It is situated in a valley among the mountains, near the river Grande, and contains about 3200 inhabitants. The situation is somewhat unhealthy.

CALCAR, **JOHN DE**, a celebrated painter, was the disciple of Titian, and perfected himself by studying Raphael. Among various pieces, he drew a Nativity, representing the angels around the infant Christ; and so ordered the disposition of his picture as to cause the light to proceed from the child. He died at Naples in 1546, in the flower of his age.

CALCAREOUS SPAR, or **CRYSTALLIZED CARBONATE OF LIME**, one of the most generally diversified substances in the mineral kingdom, and certainly that which presents the greatest variety of crystalline forms. The Abbé Haüy has drawn and described upwards of 500 of these; and since his time not fewer than 800 other distinct modifications have been determined, all of which, when fractured, present as their primitive form an obtuse rhomb of 105° 5' and 74° 55'. The most prevalent colour of calcareous spar is white, though it also presents numerous shades of yellow, green, blue, and red, most of them pale. Its dark brown and black colours are owing to the admixture of bitumen. It is transparent or translucent, and has in the clear specimens a very distinct double refraction. It has a vitreous lustre, and perfect cleavage. The pure varieties consist, according to the analyses of Stromeyer, and Phillips, of

Lime.....56.15.....55.50

Carbonic acid.....43.70.....44.00;

but the coloured ones not unfrequently contain small portions of oxide of iron, silica, magnesia, alumina, carbon, and bitumen. It effervesces violently with acids, and if pure is entirely soluble in nitric acid. At an ordinary heat it does not fuse, but gives off its carbonic acid, shines with a peculiar brightness, and ultimately becomes quick-lime. Among the most distinguished localities of calcareous spar may be enumerated Andreasberg and other mining districts in the Hartz, where the varieties in six-sided prisms have been found of great beauty; Alston Moor in Cumberland, which affords numerous flat rhombic crystals; and Derbyshire, whence the pyramidal forms, sometimes of very large dimensions, are obtained. Under the head of calcareous spar there are a number of sub-species, which depend chiefly upon their mode of composition, and upon admixtures and impurities, with which the individuals have been affected at their formation. These will be fully described among the minerals.

CALCEARIUM, in antiquity, a donative or largess bestowed on Roman soldiers for buying shoes. In monasteries, *calcearium* denoted the daily service of cleaning the shoes of the religious.

CALCEDONY. The distinction between this substance and agate rests upon very arbitrary grounds. Agate frequently presents a variety of colours, and a multiplicity of beautiful delineations. Calcedony is generally of one uniform colour, of a light brown, and sometimes nearly white. It occurs in irregular masses, forming grotesque cavities in the trap rocks, particularly in Iceland and the Faroe Isles, from the former of which there are specimens in the Museum of Edinburgh of a very large size. These stalactites appear always to have proceeded from the up-

per part of the cavity, which is sometimes filled up to the very summit with solid matter. From a close examination of these specimens, we are led to believe that the material must have been introduced into the cavity either in a state of the most attenuated fluidity, or even in a gaseous form. The structure can be traced down the sides of the cavity, regularly surrounding every portion of the stalactite, and passing across the horizontal plate which uniformly forms the base of these cavities. A slight intermixture of opalescent matter, which renders the calcedony more white and opaque, delineates this structure in the most perfect manner, and is a common occurrence in Faroe.

Calcedony is not confined to the trap rocks; it occurs in granite; and the most beautiful specimens known were found in one of the mines of Cornwall, distinguished by the name of Trevascus. It was, however, in one solitary cell that these occurred. Although the mine has continued to yield calcedony of the same character, nothing similar to these magnificent specimens has been produced since. They can scarcely be compared to any thing which they resemble more than the anatomized wing of a large bat, exhibiting the bones and arteries in the most perfect manner. One of these beautiful specimens, which was in the possession of the late Mr Greville, is now in the British Museum.

Calcedony is used for the construction of cups and plates, and other articles of taste, of which the most splendid specimens are imported into this country from India. The labour which has been bestowed in the manufacture of these articles, and the perfection with which it has been accomplished, is a matter of surprise to all who examine them. There are some of them as thin and as delicate as china. The finest stones are of course selected for this purpose. They are generally clear and almost transparent, still maintaining the warm brown colour which characterises the stone. They often have the appearance of having been hammered, so shaded and undulated is the aspect of the mass; and to add to their beauty, the fine dendritic Mocha stones are often selected. We are in ignorance even of the locality where these beautiful objects are manufactured, whether in Japan or China; but to this country they generally come from India, where, we believe, they are found among the most precious jewels in the repositories of the nabobs and princes of the East.

Calcedony in Europe is confined to labours on a much smaller scale, such as knife-handles, and mortars for chemical purposes; also for snuff-boxes, buttons, and other minor objects. The principal manufactory is at Oberstein in the Palatinate.

Calcedony is semitransparent; its texture is fine and compact; the fracture is scaly, resembling that of wax; it is less hard than rock crystal, but gives fire with steel. No indications of regular form have ever been observed in this substance; for we need not except the pale blue variety from Tresztyan in Transylvania, which is decidedly a pseudomorphic formation in the form of fluor spar. Calcedony frequently assumes the forms of other minerals, as well as of shells in many instances; but these may be considered as accidents unconnected with the history of the substance.

Connected with agate and calcedony, we may at once enumerate the different varieties which are still maintained by mineralogists.

1. Sardonyx (quartz, agate, sardoine of the French). This variety is characterised by a rich orange colour.
2. Cornelian (cornaline of the French). The characteristic colour of this variety is a brilliant red.
3. Prase (the chrysoprase of the Germans). This variety occurs at Kosmütz in Silesia. It sometimes pos-

Calchas sesses a most brilliant green colour, and is nearly transparent.

Calc-tuff. 4. Plasma, a semitransparent, and of a dark grass-green colour, and was used very much by the ancients as a stone for engraving.

5. Onyx (the band-agate of the Germans). This stone, when of favourable colours, is used by artists for cutting cameos.

Mineralogists have had the patience to split the agate into a variety of other denominations, which are not worth enumerating.

CALCHAS, in fabulous history, a famous diviner, followed the Greek army to Troy. He foretold that the siege would last ten years; and that the fleet, which was detained in the port of Aulis by contrary winds, would not sail till Agamemnon's daughter had been sacrificed to Diana. After the taking of Troy he retired to Colophon, where, it is said, he died of grief, because he could not divine what another of his profession, called Mopsus, had discovered.

CALCINATO, a market-town of Italy, in the Austrian delegation of Brescia, with 3207 inhabitants.

CALC-SINER, or STALACTITIC CARBONATE OF LIME. This occurs mamillated, or in long pendulous masses or tubes, commonly coating, or even entirely filling, the interior of caves. Though deposited from water loaded with particles of lime, and therefore in a constant state of formation, these stalactites (which outside are commonly of a yellowish-white colour, and present an infinity of different shapes and sizes) invariably afford when broken the most distinct cleavage. In this way the perfect rhomb, having the same angles as that of the calcareous spar, is easily produced from any portion of them. The extensive caverns of Adelsberg in Carniola derive their entire splendour from the thousands of these stalactites with which they are naturally ornamented in the shape of festoons, curtains, foliage, and whatever else a lively imagination may choose to invent out of the variety of fanciful and extraordinary forms they assume. These caverns constitute a labyrinth of many miles within the porous limestone rocks of the vicinity, and as yet but a small portion of them has been explored by man. The cave of Macallister, commonly called the Spar Cave, on Loch Sunert in the Isle of Skye, is another of the same description, though much inferior in extent and beauty to that of Adelsberg. The oriental alabaster, which is this same mineral in a massive state, was much prized by the ancients for statuary purposes.

CALC-TUFF, or CALCAREOUS TUFF, is the most impure, the most irregular, and the most porous, of all the varieties of limestone. It occurs in beds generally in the vicinity of lakes and rivers, also encrusting rocks, and enveloping animal and vegetable remains in the proximity of calcareous springs. Immense deposits of calc-tuff have taken place at Terni, and on the banks of the river Anio near Tivoli; where some very curious impressions, such as that of a cart-wheel, trunks of trees, &c. are to be met with. The celebrated Grecian temples of Pæstum are formed of this stone, and no doubt owe their existence, at the present period, to the circumstance of its becoming harder the longer it is exposed to the air; for, as the quarries whence it has been procured are in the immediate vicinity, and the stone previous to being exposed is so much softer, modern Vandals have found it easier to go directly to the quarry for what they wanted, than attack the long weather-beaten and now indurated Doric pillars of the temples. From its property of hardening so much on exposure to the atmosphere and to wet, this rock makes a very useful building stone in the formation of bridges. Over the Danube at Ulm a very handsome bridge has lately been constructed of it, which, when brought from the neighbouring moun-

tains, is cut into its required dimensions with the assistance merely of the axe and the saw.

CALCULUS primarily denotes a little stone or pebble, anciently used in making computations, taking suffrages, playing at tables, and the like. In after times, pieces of ivory, and counters struck of silver, gold, and other materials, were used in lieu of the calculi, but still retained the ancient name. Computists were by the lawyers called *calculones*, when they were either slaves or newly freed men; those of a better condition were named *calculatores* or *numerarii*; there was ordinarily one of these in each family of distinction. The Roman judges anciently gave their opinions by calculi, which were white for absolution, and black for condemnation. Hence *calculus albus*, in ancient writers, denotes a favourable vote, either in the case of a person to be absolved and acquitted of a charge, or elected to some dignity or post; and *calculus niger* had a contrary signification. This usage is said to have been borrowed from the Thracians, who marked their happy or prosperous days by *white*, and their unhappy by *black* pebbles, which were put each night into an urn.

Besides the diversity of colour, there were some calculi also which had figures or characters engraven on them, as those which were in use in taking the suffrages both in the senate and in assemblies of the people. These calculi were made of thin wood, polished and covered over with wax. Their form is still seen in some medals of the Casian family; and the manner of casting them into the urns is represented in the medals of the Licinian family. The letters marked upon these calculi were U. R. for *ut rogas*, and A. for *antiquo*; the first of which expressed an approbation of the law, the latter a rejection of it. Afterwards the judges who sat in capital causes used calculi marked with the letter A. for *absolve*; C. for *condemno*; and N. L. for *non liquet*, signifying that a more full information was required.

CALCULUS is also used by ancient writers for a kind of weight equal to two grains of cicer. Some make it equivalent to the siliqua, which is equal to three grains of barley. Two calculi composed the ceratium.

CALCULUS, in *Mathematics*, is a general name given to various ways of investigating or establishing the truths of that science by the aid of conventional symbols or characters which represent the things treated of, also the operations to be performed on them, and the relations in which they stand to one another. Thus we have the common *Arithmetical Calculus*, and the *Algebraic Calculus*. The term is applied to a considerable number of distinct mathematical theories, the principal of which are these:

The *Differential CALCULUS* and the *Integral CALCULUS*. The invention of these is claimed for Leibnitz. They are identical with the *Fluxionary CALCULUS*, the invention of Newton.

The *CALCULUS of Partial Differences*, which is a branch of the Differential and Integral Calculus.

The *CALCULUS of Variations*, another branch of the same theory. Its principal object is to determine when mathematical quantities, subject to certain conditions, are the greatest or least possible. This theory, first broached by James and John Bernoulli, was perfected by Euler and La Grange, who have discussed it in their writings. There is a distinct treatise on this subject by the late Mr Woodhouse of Cambridge.

The *CALCULUS of Exponentials*, or Exponential Calculus. This may include the doctrine of logarithms; but the name is commonly applied to the method of finding the differentials or fluxions of exponential and logarithmic quantities. John Bernoulli was the first who treated of this subject as a distinct calculus. (*Bernoulli Opera*, tom. i. page 179.)

The *CALCULUS of Functions*, the same in effect with the

Calcutta. Differential or Fluxionary Calculus. La Grange gave this name to his particular view of the subject. (*Théorie des Fonctions Analytiques*, also *Leçons sur le Calcul des Fonctions*.)

The CALCULUS of Finite Differences. This investigates the properties of quantities by means of their differences; it is of great value in the summation of infinite series. Brooke Taylor's *Methodus Incrementorum*, Stirling's *Methodus Differentialis*, and Emerson's *Method of Increments*, also his *Differential Method*, all treat of this subject. There are also various treatises in works on the Differential Calculus, as Lacroix, &c

The CALCULUS of Derivations. This is applicable to the doctrine of series, and is due to a continental mathematician, Arbogast, who has composed a treatise on the subject. (Arbogast *Du Calcul des Dérivations*.)

The CALCULUS of Probabilities. This treats of every thing connected with the *Doctrine of Chances*. The most valuable work on this subject is La Place's *Théorie Analytique des Probabilités*.

The CALCULUS of Sines. This branch of mathematical science was embodied in a distinct form by Euler. See his various writings, particularly his *Analysis Infinitorum*. We have explained this calculus in our article ALGEBRA.

There are some other mathematical theories which have been distinguished each as a separate Calculus, as Landen's *Residual Analysis*, Glenie's *Antecedental Calculus* (*Edin. Phil. Trans.* vol. iv.), &c.

Calculus Minervæ, among the ancient lawyers, denoted the decision of a cause in regard to which the judges were equally divided. The expression is taken from the history of Orestes, represented by Æschylus and Euripides; at whose trial before the Areopagites, for the murder of his mother, the votes being equally divided for and against him, Minerva interposed, and gave the casting vote or calculus in his behalf.

CALCUTTA, one of the largest and most splendid cities of Asia, the modern capital of Hindustan, and the seat of the supreme government of the British in India. It is situated upon the river Hooghly, which forms the western channel of the Ganges, and, though not the principal, is the only one of its numerous branches which is navigable for large vessels. It stands on an almost perfect level of alluvial and marshy ground, which a century ago was covered with jungle and stagnant pools, and which still almost everywhere betrays its unsoundness by the cracks conspicuous in the best houses. The town is 100 miles from the mouth of the river, the navigation of which is difficult, and often dangerous, on account of its numerous sand banks, many of which are continually shifting their situation. Vessels drawing more than seventeen feet water cannot, except at spring-tides, ascend with safety above Diamond Harbour, where the vessels of the East India Company usually load and unload. This is about sixty miles below Calcutta; and passengers are conveyed to the city in smaller vessels or in boats. The country, from the mouth of the Hooghly to Diamond Harbour, is dreary in the extreme; the banks of the river are high, and the adjacent land on each side, which is perfectly flat, forms a complete wilderness of timber and brushwood, the haunt of tigers, and of other beasts of prey. Advancing up the river, the scene gradually improves; the country becomes more and more cultivated; the shipping and the bustle on the river increase; and the beautiful country-seats on its banks announce the approach to the capital. The city, with its numerous spires and other public edifices, presents, at a distance, a striking appearance; and, on landing, the magnificence of the buildings commands the admiration of all strangers. The town and suburbs extend along the left or eastern bank of the river

above six miles, but varying much in breadth at different places. In the middle of it, and very near the landing place, is an immense square, each side of which extends above a quarter of a mile; and the centre is occupied by a large tank or open reservoir of water for the supply of the town. This square, together with the adjacent buildings and those towards the south, forms what is properly termed the town of Calcutta, the residence of the European inhabitants and of the natives of distinction. To the south, along the bank of the river, lies the Black Town, which is occupied entirely by the lower classes of inhabitants, and is rather considered as part of the suburbs; and about a quarter of a mile to the north stand Fort-William and the barracks, which form on this side a great ornament to the city. The intermediate space, which is an extensive open plain, is termed the esplanade. The citadel of Fort-William, which was begun by Lord Clive in 1757, after the battle of Plasscy, is the strongest and most regular fortress in India; but the works are so extensive that they would require at least 9000 or 10,000 men, with 600 pieces of cannon, to defend them. On the west of the esplanade stands the government-house, built by the Marquis Wellesley, which is the largest and most splendid building in Calcutta. It is the residence of the governor-general, where he holds levees, and transacts all the government business; it also contains magnificent apartments for public entertainments. The other public buildings are a town-house, with public rooms, which, though handsome, are too confined for the climate and for the number of the inhabitants; a court of justice, the hospital, and jail, which are situated on the esplanade; two English churches, the one of which is a plain building, but the other has an elegant appearance; a Scottish church; also churches for the Portuguese Catholics; another for those of the Greek persuasion, an Arminian church, many small Hindu pagodas, Mahommedan mosques, and a Sikk temple. All these various religions here enjoy the most perfect toleration.

The custom-house faces the river, and forms part of the west side of the great square. It is built upon the site of the old fort, which was taken in 1757 by Surajah Dowlah. Near to it is the famous Black Hole, which is now converted into a warehouse; and before the gate stands the monument which has been erected to commemorate the unfortunate persons who perished there. It is surrounded by an iron railing; but it has been struck with lightning, and has since been allowed to go to decay. In front of the custom-house is the quay, which has been of essential service to the numerous shipping which there load and unload. On the west side of the river, and in a beautiful situation, stands the botanic garden, at a bend to which it gives the name of Garden Reach. It contains a splendid collection of plants from every quarter of the globe, and is laid out with great taste, but more with a view to practical utility than scientific arrangement. Above the garden there is an extensive plantation of teak. Horse-racing having been discouraged by government, the course, which was to the south of the town, is now converted into a ride; but the practice still continues at Barrackpore, sixteen miles up the river, where the fashionable society of Calcutta assemble to partake of the amusement. The south side of the great square is occupied by the writers' buildings, which make but an indifferent appearance. They form the residence of this class of the Company's servants who are newly arrived from Europe, and who are students at the college of Fort-William. The private houses in Calcutta, in the central or genteel part of the town, are built mostly after the European fashion, but modified to the nature of the climate and to the magnificence of eastern manners. In a line with the government-house is a

Calcutta. range of elegant buildings, ornamented with large verandahs, and another, at right angles with it, called Chouringee, formerly occupied by native huts. These houses are built of brick, covered with a species of stucco called chunam. They are all separated from each other, every one having attached to it a considerable piece of inclosed ground, in the middle of which it is situated. The approach is by a flight of steps under a large portico. The architecture is Grecian, and the profusion of columns, porticoes, and verandahs, gives them more the air of palaces than of private houses. To this part of Calcutta the Black Town, which extends along the river to the north of Calcutta, forms a striking contrast. It is built after the model of Indian towns, is very large, and swarming with population. The streets are exceedingly narrow, crooked, and dirty, and are all unpaved, with numerous ponds, reservoirs, and gardens, interspersed. A few of the streets are paved with brick. The houses are built, some of brick, above two stories high; but the great majority are built of bamboos and mats, only one story high, and covered with thatch; all which different kinds of fabrics standing intermixed present a very uncouth appearance. The houses being for the most part formed of such combustible materials, fires are common, and have often proved very destructive. Within these thirty or forty years, however, this quarter of the town has been greatly improved both in appearance and in the salubrity of the air; the streets have been widened and properly drained, and the ponds have been filled; a large surface of stagnant water has been thereby removed, the exhalations from which were prejudicial to health; and the houses have been rendered less combustible, by being tiled in place of thatched.

Though building materials are abundant in the neighbourhood of Calcutta, house-rent is not moderate. This is owing partly to the high interest of money, and partly to the constant repairs which are required, from the casting of the wood in this hot climate, and from the ravages of insects, particularly the white ants. Though the woodwork of a house appear externally quite sound, it often turns out upon examination to be completely excavated or honeycombed by these insects, which assemble in incredible numbers wherever they can find an entrance.

The houses here which are known under the name of taverns are greatly inferior in respectability to those in Europe. They are, with the exception of two or three particular houses, resorted to only by the lowest company; and strangers who are enticed into them are exposed to every species of imposition, and frequently to total ruin. A European, on his first landing, is surrounded by numerous dangers and inconveniences, which he finds it extremely difficult to escape. These are so well described in the *East India Vade-Mecum*, by Captain Thomas Williamson, that we will extract the following passages for the instruction of such of our countrymen as propose to visit those distant regions.

"The tavern-keeper, under the plausible pretext of aiding towards the completion of the youth's wishes, never fails to inquire whether the gentleman has any friends in town, or even in the country. If affirmatively answered, 'mine host' feels himself tolerably secure of his money; but will probably assert that the friend in town is out of the way, and will not be back for some days. Should the gentleman be totally destitute of friends, then comes the rich harvest. Imposition following imposition swell the bill, which, if appearances warrant forbearance, is kept back as long as possible, under the pleasing assurance of perfect confidence; but in the end a catalogue of items is produced, which never fails to alarm, if not to ruin, the unsuspecting victim!

"If, unhappily, the guest should so far lower himself as

to associate with the ordinary company of the common drinking-room, he is irretrievably gone. Quarrels, riots, and inebriety, must follow, in all probability rendering him subject to the notice of the police. *Should his face ever be seen at that office, it would be next to impossible that he should be admitted into any respectable circle.* What with lodging, dinners, wines, &c. of the worst description, but all rated at the highest prices, he must be a fortunate wight who escapes under a gold mohur (*i.e.* two guineas) per day; in general double that sum is charged; so that a person starts at the rate of L.1000 per annum at least; while, in all probability, no established or even apparent provision exists whereby he may be maintained.

"To state the evil without pointing out the remedy would be next to useless; but when I suggest the means of avoiding those difficulties, or any portion of them, attendant on arrival in a foreign land, it must be understood that I consider the stranger to be possessed of pecuniary means; that is, that he can pay his way. Without this he can do nothing, and must undergo all the afflictions and miseries attendant upon despised poverty in every part of the globe. It may be proper to point out in this place, that what might here appear to be liberal calculations, would not suit the East, where every article of European manufacture bears so enormous a price, where house-rent is so expensive, and where it is indispensably necessary to retain so many servants. The first thing to be done (setting a letter of recommendation out of the question) should be to report arrival at the secretary's office, depositing the certificate of the court of directors' license to proceed to India; without which the party is considered as an alien, and scarcely considered as entitled to British protection. This does not arise from ill will on the part of government or of the inhabitants, but from that strict attention the politics of the country imperiously demand to be paid to the several characters and descriptions of persons residing within our territory.

"The above relates equally to all persons in the civil or military branches; the certificate granted at the India House must be produced, in order to identify the party; but if it should have been lost, he himself, together with the commander who received the order for taking him on board, must attend; to make affidavit to that effect, before the appointment can be admitted upon the registers in India.

"Such as appertain to the civil service, being always strongly recommended, and often finding many old acquaintances of their families on the spot, require but little advice; nor does the cadet stand much in need of instruction as to the manner in which he should provide himself with a home. All he has to do is to wait upon the town-major, at his office in Fort-William, when he will receive the necessary order for his admission into the cadet corps at Baraset, about sixteen miles from Calcutta.

"He who has not these advantages must do the best his circumstances may afford; he will find temperance to be not only cheap, but indispensable; for if he should act so indiscreetly at the outset as to injure his health, a thousand privations and a certain increase of difficulties must follow. The first point must necessarily be to get under cover. This will not be found so easy as those who have never quitted England may suppose. It will be after much research that a small house will be had, and then only the bare walls; for no such thing is known in India as a furnished house to be let; and lodgings are, if possible, still more out of the question. Fortunately there are among the European shopkeepers in Calcutta some most respectable characters,—men distinguished for their urbanity, philanthropy, and generosity. Application should be instantly made to one of these firms for aid and advice.

Calcutta.

Calcutta. The case should be candidly stated; and, in order to insure confidence, a deposit of money should be made either with them or at one of the banks. The consequences will be, that in a few hours some small tenement will be obtained, either on hire or granted as a temporary accommodation; and the whole of the articles really necessary will be provided at some one or other of the auctions which daily take place within the central parts of the town."

Calcutta is the great emporium of the East. By means of the Ganges and its tributary streams it has an uninterrupted water communication with the whole of the north of Hindustan. There are three artificial canals by which the communication is maintained with the upper country without passing through the unhealthy and dangerous channel of the Sunderbunds. But this channel has never yet been kept permanently open. The discovery of steam navigation has proved of eminent utility on the Ganges. Steam packets now proceed up the river with passengers, and effect a voyage in three weeks that used to occupy as many months. Government steam vessels, some of them armed, also ply upon the river. Calcutta, being so advantageously situated for commerce, trades extensively with almost every country in the world, and numbers of vessels of every form and description are constantly arriving in or departing from the river, which in the vicinity of the town presents the busiest scene imaginable. Numerous dock-yards have also been established, in which are built vessels of great burden and of admirable construction. Piece goods, shawls, indigo, silk, sugar, opium, and rum, are the staple commodities of export. Treasure is imported from all quarters. From London, the imports consist principally of articles of consumption for the European inhabitants, consisting of wine, porter, ale, confectionaries, and generally of all the finer manufactures.

In 1808 a bank was established at Calcutta, under the name of the Calcutta Bank. Its capital amounts to fifty lacs of rupees, of which ten were subscribed by government, and the remainder by individuals. There are besides three private banks, and it is estimated that the paper circulation amounts to one crore of rupees, or one million sterling. There are twelve insurance companies; and in 1825 there were published two daily newspapers, besides the Government Gazette and the India Gazette twice a week, and one weekly paper. There were two native weekly newspapers in Persian, and two in Bengalese, to which in 1826 another was added.

The institutions for education in Calcutta are numerous, of which the principal are, the Madressa or Mahomedan college, founded in 1780, for the instruction of the Musulman youth in the Arabic and Persian languages, and in Mahomedan law; the college of Fort William, begun in 1801, for instructing the public servants of the Company in the native languages of the country, namely, the Hindustanee, Bengalee, Persian, and Arabic, now a flourishing and well-regulated institution, in which, at the annual examinations, great proficiency is displayed by the students; the Sanscrit College, for which a handsome building has been erected, founded in 1821, for the instruction of the natives in the Sanscrit language and Brahminical literature, and also in the English language and literature; the Anglo-Indian College, established originally by respectable natives, chiefly for the instruction of Hindu youths in the English language; Bishop's College, for the instruction of missionaries in the languages of the

East; and a Medical School for native doctors, established at Calcutta in 1822. In 1823 a committee of public instruction was formed, who are authorized to exercise a superintendence over all government seminaries, and to give an impulse, as well as a judicious direction, to efforts made for diffusing instruction among the Hindus. There are numerous missionary societies and institutions, with extensive establishments for education,¹ as well as various other schools and institutions, religious and charitable. A free school has been established, which Bishop Heber terms a noble institution, at which between 200 and 300 boys and girls are boarded, besides day scholars. They are taught according to Dr Bell's system. Some few of the scholars are Arminian Christians, and there are one or two Hindus. There is also the Armenian Academy and a grammar school for the instruction of the Indo-British youth in classical literature. Under the patronage of a society of European ladies, native schools were established in 1821, with female teachers. Formerly no instance was ever known of an Indian female being instructed in reading, writing, or sewing. In 1826, 600 female Hindu pupils were taught in the various schools of Calcutta;² and in the indigenous schools, which are taught by native masters, and in which the parents of the boys pay for their education, the number of pupils amounts to nearly 3000.³ There are two schools for the education and maintenance of the children of Europeans in the military service of the Company, one for the children of officers, and another for those of the privates; and there are several literary and scientific societies. The Asiatic Society still continues its sittings, and publishes its Transactions, which contain much interesting information concerning the history, literature, languages, and antiquities of Asia. The charitable institutions are numerous, namely, the Bethel Union, the Seaman's Friend Society, the Military Orphan Society, the Military Widow's Fund, Lord Clive's Fund, the King's Military Fund, the Marine Pension Fund, the Civil Fund, the Mariner's and General Widow's Fund, the Presidency General Hospital, the Native Hospital, the Hospital for Native Lunatics, the Government Establishment for Vaccination, the Charitable Fund for Distressed Europeans, the European Female Orphan Society.

The supreme court consists of a chief justice and two puisne judges, all nominated by the crown. Its jurisdiction extends to all British subjects in India, and to all civil actions between natives, or between natives and Europeans. Criminal cases are tried in this court by a jury consisting exclusively of British subjects, as also all criminal charges against the Company's servants, and all civil actions in which the Company or any of its servants are concerned; but it takes no cognizance of the land revenues. The law practitioners attached to this court are fourteen attorneys and six barristers.

The population of Calcutta, which is stated by some to amount to 500,000, by others to 700,000, is composed of persons from every quarter of the world. British and other Europeans, Armenians, Persians, Chinese, Hindoos, and Mahomedans, are all seen mixing in the streets of this metropolis. The occupations of these various classes are nearly what might be expected in the luxurious capital of a great empire, and in so great an emporium of maritime commerce. Public officers, lawyers, physicians, merchants, and their families, make up the bulk of the British inhabitants. The natives and foreigners of respectability are mostly engaged in trade, or living upon their

¹ These are, the Calcutta Auxiliary Church Missionary Society, the Church Missionary Association, Diocesan Committee for the Distribution of Books and the Conversion of the Hindus, the Bengal Missionary Society, the Baptist Missionary Society, an Auxiliary Bible Society, &c.

² See Heber's *Journey through the Upper Provinces of India*.

³ *Asiatic Annual Register*, vol. xix.

Calcutta. property, and the lower classes are principally composed of retail-dealers, mechanics, and servants.

The most various estimates are given of the population of Calcutta; and it is doubtful if there be any correct census. In 1752 the number of houses within the Company's bounds was estimated at 51,132, and the constant inhabitants at 409,056. In 1802 the police magistrates estimated the population at 600,000. In 1810 the chief judge Sir Henry Russel computed the population at between 400,000 and 500,000 inhabitants. In 1819 the School Society's estimate amounted to 750,000; and in 1822 the following census was returned:

Christians.....	13,138
Mahomedans.....	48,161
Hindus.....	118,203
Chinese.....	414

179,916

From these different estimates it appeared to the magistrates that the resident population might be estimated at 200,000, and those going and coming at 100,000; and that the medium estimate of 300,000 would therefore be not far from the truth.

The British merchants form a most respectable class of men, and contribute essentially to the prosperity of the settlement; many of them are possessed of large fortunes, and live in a style of suitable splendour. The Armenians are the most numerous body of foreign merchants in Calcutta. They trade extensively to all parts of India and China, and are uncommonly diligent and attentive to business, and are considered to have the most minute intelligence from foreign ports of any other body of merchants. The native bankers, agents, and money-dealers, are numerous. Though formerly timorous, the Hindu now adventures in almost every species of mercantile speculation; and cloths belonging to the native merchants, to the amount of L.1,000,000 sterling, are generally lying for sale in the warehouses of Calcutta. The native merchants of an inferior class engross nearly the whole of the retail trade of Calcutta, under the titles of Banians, Sircars, and Writers; and they are generally described as fond of money to excess, and most unprincipled in all their dealings.

The English society in Calcutta is of the best description, and numerous fêtes are given during the cold season, which lasts from September to April, on a splendid scale, by the governor-general and other public functionaries, as well as by individuals. There are public subscription assemblies, besides select evening parties under the name of conversaziones, enlivened by music, dancing, cards, and other amusements. There is a theatre, supported by amateur performers; and public concerts are given, which are also supported by amateur talent. The usual mode of visiting is in palanquins. But many of the British have carriages adapted to the climate; and the breed of horses having been greatly improved, it is the universal practice to drive out between sunset and dinner; and as it becomes dark, servants go out with torches and meet their masters, and run before their carriages, though going at a rapid rate, for a very long time. The British inhabitants of India are distinguished by their hospitable dispositions, and are most liberal to all who call on them for aid. It is only during the cold season that it is possible to venture abroad in the heat of the day, which, in the rest of the year, is devoted to repose. The hot season begins in April. Every day the heat increases until the middle of June, when the periodical rains begin, which last till August. The weather then being extremely close, is more oppressive and more unhealthy than before. The thermometer throughout the year generally ranges between 75° and 95°, but frequently rises to 100° and 110°.

It was in 1690 that the English, in virtue of a firman granted by Aurungzebe, founded a factory at Calcutta, which was then a village, the houses of which were scattered about in clusters of ten or twelve each, and the inhabitants chiefly husbandmen; and in 1696, in consequence of the disturbed state of Bengal, they were allowed to raise works of defence. To the southward of Chandpaul Ghaut extended a forest; and between Kidderpore and the forest were two villages, where now stand Fort William and the esplanade. In 1717 there was a small straggling village, surrounded by puddles of water, where now stand the elegant houses at Chowringhee, and the town extended to Chitpore Bridge; but the intervening space consisted of ground covered with jungle. In 1752 a ditch was dug round a considerable part of the town, as a barrier against the inroads of the Mahrattas. About this time the town was garrisoned by three hundred Europeans, who were frequently employed in conveying the Company's vessels from Patna, loaded with saltpetre, piece goods, opium, and raw silk. The trade of Bengal alone supplied rich cargoes for fifty or sixty ships annually, besides what was carried on in small vessels to the adjacent countries. It was this flourishing state of Calcutta which probably induced the nabob Surajah Dowlah to attack it in the year 1756. Having had the fort of Cossimbazar delivered up to him, he marched against Calcutta with all his forces, amounting to seventy thousand horse and foot, with four hundred elephants, and invested the place on the 15th of June. Previous to any hostilities, however, he wrote a letter to Mr Drake, the governor, offering to withdraw his troops, on condition that he would pay him his duty on the trade for fifteen years past, defray the expense of his army, and deliver up the black merchants who were in the fort. This being refused, he attacked one of the redoubts at the entrance of the town; but was repulsed with great slaughter. On the 16th he attacked another advanced post, but was likewise repulsed with great loss. Notwithstanding this disappointment, however, the attempt was renewed on the 18th, when the troops abandoned these posts and retreated into the fort; on which the nabob's troops entered the town, and plundered it for twenty-four hours. An order was then given for attacking the fort; for which purpose a small breast-work was thrown up, and two twelve-pounders mounted upon it, but without firing oftener than two or three times an hour. The governor then called a council of war, when the captain of the train informed them that there was not ammunition in the fort to serve three days, in consequence of which the principal ladies were sent on board the ships lying before the fort. They were followed by the governor, who declared himself a quaker, and left the place to be defended by Mr Holwell, the second in council. Besides the governor, four of the council, eight gentlemen of the Company's service, four officers, and a hundred soldiers, with fifty-two free merchants, captains of ships, and other gentlemen, escaped on board the ships, where were also fifty-nine ladies, with thirty-three of their children. The whole number left in the fort was about two hundred and fifty effective men, with Mr Holwell, four captains, five lieutenants, six ensigns, and five sergeants; as also fourteen sea-captains, and twenty-nine gentlemen of the factory. Mr Holwell then having held a council of war, divided three chests of treasure among the discontented soldiers, making them large promises also, if they behaved with courage and fidelity; after which he boldly stood on the defence of the place, notwithstanding the immense force which opposed him. The attack was very vigorous; the enemy having got possession of the houses, galled the English from thence, and drove them from the bastions; but they themselves were

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several times dislodged by the fire from the fort, which killed an incredible number, with the loss of only five English soldiers the first day. The attack, however, was continued till the afternoon of the 20th, when many of the garrison being killed and wounded, and their ammunition almost exhausted, a flag of truce was hung out. Mr Holwell intended to avail himself of this opportunity to make his escape on board the ships, but they had fallen several miles down from the fort, without leaving even a single boat to facilitate the escape of those who remained. In the mean time, however, the back gate was betrayed by the Dutch guard; and the enemy, entering the fort, killed all they first met, and took the rest prisoners.

The fort was taken before six in the evening; and, in an hour after, Mr Holwell had three audiences of the nabob, the last being in the durbar or council. In all these the governor had the most positive assurances that no harm should happen to any of the prisoners. As soon as it was dark they were collected, to the number of a hundred and forty-six; and the guard, by pressing on them with presented muskets, and by clubs and simitars, forced them into the Black Hole prison, a dungeon about eighteen feet square, in which, out of a hundred and forty-six, only twenty-three persons came out alive in the morning, and most of them in a high putrid fever.

The injuries which Calcutta suffered at this time, however, were soon repaired. The place was retaken by Admiral Watson and Colonel Clive early in 1737; Surajah Dowlah was defeated, deposed, and put to death; and Meer Jaffier, who succeeded him in the nabobship, engaged to pay an immense sum for the indemnification of the inhabitants. Since that time the immense acquisition of territory by the British in this part of the world, and the constant state of security enjoyed by this city, have raised it to its present prosperity and splendour. Fort William stands in long. 88. 28. E. lat. 22. 33. N. (F.)

CALDARIUM, in the ancient baths, denoted a brazen vessel or cistern, placed in the hypocaustum, full of hot water, to be drawn thence into the *piscina* or bath, to give it the necessary degree of heat. In this sense the *caldarium* stands contradistinguished from the *tepedarium* and *frigidarium*.

CALDARIUM also denoted the stove or sudatory, being a close vaulted room, in which, by hot dry fumes, without water, people were brought to a profuse sweat. In this sense *caldarium* was the same with what was otherwise denominated *vaporarium*, *sudatorium*, and *laconium*; and in the Greek baths, *hypocaustum*, *ὑποκαυστήριον*.

CALDERINUS, DOMITIUS, a learned critic, born at Calderia, near Verona. He read lectures upon polite literature at Rome with great reputation, and was the first who ventured to write upon the most difficult of the ancient poets. He died very young in 1477.

CALDERON DE LA BARCA, DON PEDRO, a celebrated Spanish dramatic author, was born in 1600. Having early completed his studies, he attached himself to some patrons about court; but being soon disgusted with this state of dependence he enlisted as a common soldier, and made several campaigns in Italy and the Low Countries. During this time, however, he cultivated a taste for dramatic poetry; and Philip IV., who was a passionate admirer of the drama, hearing people speak highly of the talents of our author, and thinking that he might confer éclat on the court theatre, invited Calderon to Madrid in 1636, made him a knight of the order of St Jago, supplied the expense of the representation of his pieces, and consulted him as to the arrangement of all public festivals and solemnities. It is also said that, during the minority of Louis XIV. Calderon visited Paris, and composed verses in praise of Anne of Austria. In 1652, he devoted him-

self to the church, and became a canon at Toledo. From this period till that of his death, which happened in 1687, he abandoned dramatic composition, except on sacred subjects. His works are very numerous, exceeding, we believe, fifteen hundred. No nation, in fact, can boast of so prolific writers as Spain. Lopez de Vega, for instance, is said to have composed two thousand comedias; a fertility which would be less surprising if the pieces themselves were of an inferior order, or destitute of merit; but, though deformed by the most extraordinary faults, they are at the same time enlivened by brilliant coruscations of genius and fancy. It must, however, be admitted that Virvez, and particularly Lopez and Calderon, had begun, even in the age of Cervantes, to corrupt the Spanish drama. Before their time, the productions of Castillejo and of Juan de la Cueva were more regular, though less forcible, spirited, and interesting; but after their appearance, the unities were totally disregarded, and dramatic writers assumed a degree of license which was pushed to the utmost height of extravagance. Cervantes opposed himself strenuously to this innovation, but in vain. Lopez and Calderon were as well acquainted with the established rules as Cervantes himself; but they knew only to despise them. The judicious author of the *Bibliothèque Espagnole* places Calderon on a footing of equality with Lopez de Vega, and says that this was the general opinion among their contemporaries. But Linguet in his *Théâtre Espagnol* hesitates not to place Calderon in the first rank; whilst Emmanuel de Guerra says that Calderon imitated no one (*a ninguno imito*), and drew from his own imagination alone. This is indeed evident; for his delineations are deficient in truth, and his characters are altogether fantastical. The pieces of Calderon, like those of the Spanish theatre generally, are divided into three *days* or acts, and the scene is often changed. His comedies almost always exhibit vice triumphant; and it cannot with any truth be said of him, *castigat ridendo mores*. The *gracioso* or buffoon is, for the most part, one of his principal characters; and sometimes, as in *Heraclius*, a couple of these personages are introduced. The piece of Calderon entitled *No ai burlas con el Amor* appears to have suggested to Molière the idea of his *Femmes Savantes*; while the one entitled *Nunca la peor es cierto* has been grossly disfigured by Scarron in his comedy of *La Fausse Apparence*. Lastly, the infamous Collot d'Herbois caused to be represented, with a certain degree of success, in 1777, on one of the provincial theatres of France, and again in 1789, in the Théâtre Français at Paris, the *Paysan Magistrat*, imitated from the piece of Calderon entitled *Alcalde de Zalamea*. Besides his plays, Calderon composed a considerable number of *Autos Sacramentales*, or sacred pieces, analogous to those which are elsewhere denominated *Mysteries*, *Acts of the Saints*, and *Moralities*. Calderon is not relished in France, and but little known in this country. In Germany, however, he enjoys a great reputation. M. Schlegel has translated some of his best pieces; while his *Constant Prince*, and *Life is a Dream*, have been repeatedly represented with success on the boards at Weimar. The former of these pieces is generally considered as the master-piece of Calderon. The works of this author were reprinted at Madrid in 1726 and 1760, in ten volumes 4to; and a collection of his *Autos Sacramentales* appeared at Madrid in 1759, in six volumes 4to. His manuscript *Letters* are preserved among the archives of the house of Calderon.

CALDERWOOD, DAVID, an industrious historian of the church of Scotland, and a strenuous defender of its discipline, was born in the year 1575. He was educated in the university of Edinburgh, where he took the degree of A. M. in the year 1594; and having been early destined for the church, he devoted much attention to the re-

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quisite studies, and acquired a large fund of theological learning. Soon after the commencement of the ensuing century, he became minister of Crailing near Jedburgh, and he speedily began to take a very conspicuous part in the ecclesiastical proceedings of that period.

The king, who seems to have considered prelacy as a convenient instrument of arbitrary power, was extremely anxious to assimilate the church of Scotland to the church of England. Having succeeded in obtruding episcopacy, which was a very unwelcome guest, it was the next object of his solicitude to enlarge the authority and jurisdiction of the bishops; and regarding the end as highly desirable, he was not extremely scrupulous as to the means. His schemes were however opposed by many of the clergy, and were not relished by the great body of the people; nor was any individual more resolute or more consistent in his opposition than Calderwood, who spent the best years of his life in contending for purity of doctrine and simplicity of discipline. In the year 1608, when Law, bishop of Orkney, made his appearance in the capacity of visitor of the presbytery of Jedburgh, Calderwood, together with George Johnston, minister of Ancram, took a formal protest against his authority, and drew up a declinature, divided into various heads. Dr Abernethy, minister of Jedburgh, professed at first to support them in their opposition; but his zeal having very speedily abated, he was appointed perpetual moderator of the presbytery, and in due time became bishop of Caithness. Calderwood and Johnston had been elected members of the general assembly; but in order to exclude them from this and other ecclesiastical courts, the visitor ordered them to be "put to the horn" the very same night. The registration of the writ in the sheriff's books was with great difficulty prevented; but in consequence of Bishop Law's information, the king directed the privy council to punish them in an exemplary manner. By the intercession of the earl of Lothian with the chancellor and the earl of Dunbar, their punishment was restricted to confinement within the limits of their respective parishes.¹

With the benefit of episcopacy the king imparted to his native country the benefit of a Court of High Commission; an illegal and despotic tribunal, which, though not vested with such terrific powers, bore some resemblance to the Spanish inquisition. The English court was erected in the reign of Elizabeth, and was intended to maintain the dignity and peace of the church, by reforming, ordering, and correcting the ecclesiastical state and persons, and all manner of errors, heresies, schisms, abuses, offences, contempts, and enormities: but it is admitted by a writer who commonly touches despotism with a very gentle hand, that under the shelter of these general expressions, "means were found in that and the two succeeding reigns, to vest in the high commissioners extraordinary and almost despotic powers, of fining and imprisoning; which they exerted much beyond the degree of the offence itself, and frequently over offences by no means of spiritual cognizance."² This court was erected by virtue of an act of parliament; but, in 1610, James, of his sovereign authority, issued under the great seal of Scotland a commission for erecting a similar court in each of the two archbishoprics of St Andrews and Glasgow. It is very justly observed by Calderwood, who did not entirely escape the fangs of this new instrument of persecution, that "this commission put the king in possession of that which he had long time hunted for; to wit, of absolute power to use the bodies

and goods of his subjects at pleasure, without form or process of the common law."³

James paid a visit to Scotland in the year 1617. During the sitting of the parliament, which assembled on the 17th of June, the clergy held several meetings in the Little Church, one or more of the bishops being always present. Calderwood, whose zeal was never dormant, repaired to the church in order to learn the nature of their deliberations; and on hearing Knox, bishop of the Isles, make some allusion to the English convocation, he protested that such a meeting should not be acknowledged as a general assembly, or any other meeting equivalent to it, "or any wayes answerable to the English convocation-house, where the clergie convened in time of their parliaments." It is by no means improbable that such an innovation was secretly contemplated. Their chief consultations related to the temporal emoluments of the clergy, and he attempted to direct their attention to matters of greater importance than the augmentation of stipends, evidently alluding to what he conceived to be the danger of the church from foreign ceremonies and observances. He was assured that no alteration was to be apprehended, and that the bishops had given such a promise. Of their fidelity in keeping their promises, said the inflexible presbyter, we have had sufficient proofs for the last sixteen years; and he was proceeding to enlarge on some kindred topics, when he was interrupted by Dr Whitford and Dr Hamilton, who reverted to the more interesting subject of stipends. Finding that they were not disposed to listen to his suggestions, he left the meeting with this expression of his indignation: "It is absurd to see men sitting in silks and sattins, and to cry povertie in the kirk, when puritie is departing." The two archbishops, on being informed of what had taken place, attended the meeting next day, and solemnly declared that no innovations were intended: but this declaration was so much at variance with unequivocal facts, that many of the clergy felt no small degree of alarm; and a considerable number of them having assembled in the music-school, resolved upon drawing up a remonstrance to his majesty. Two of the Edinburgh clergy, Hewat and Struthers, were appointed to prepare it; and when it was finally adjusted, Archibald Simson, minister of Dalkeith, was directed to sign it as clerk of the meeting; but the names of all those who attended were subscribed in a separate paper, which was delivered to him as a voucher to be used according to circumstances. He presented a copy to the clerk register, who refused to read it in parliament; and having been summoned before the High Commission, he declined to produce the signatures, and was committed as a prisoner to the castle of Edinburgh. This paper he had entrusted to the master of the music-school, Patrick Henryson, who delivered it to Calderwood. The minister of Crailing was therefore cited to appear at St Andrews on the eighth of July, and there to exhibit the roll of names, and "to answer for his mutinous and seditious assistance to the said assembly." Hewat and Simson were summoned at the same time, and they all made their appearance; but their examination was deferred till the twelfth, in order that it might take place in his majesty's presence. James conducted himself in his usual manner, but the stern and undaunted Calderwood was not to be overawed by any earthly authority which he conceived to be unjustly exercised. The king having at length whispered in the primate's ear, "his majesty," he stated, "saith that if yc will not be content to be suspend-

¹ Calderwood's Hist. of the Church of Scotland, p. 578, 599.

² Blackstone's Commentaries on the Laws of England, vol. iii. p. 68.—"What is this," says Calderwood, "but the Spanish inquisition? Set me up this throne, Satan shall set up papistry, or any other religion whatsoever, in short processe of time." (*Altar of Damascus*, p. 39.)

³ Calderwood's Hist. p. 619.

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ed spiritually, ye shall be suspended corporally." Undismayed by this declaration, he replied, "Sir, my bodie is in your majesty's hands to do with it as it pleaseth your majesty; but as long as my bodie is free, I will teach, notwithstanding of their sentence." Spotswood describes him as "carrying himself unreverently, and breaking forth into speeches not becoming a subject;"¹ nor is it difficult to conceive that the archbishop of St Andrews and the minister of Crailing may have formed a very different estimate of the speeches which became a subject placed in such circumstances.

Hewat, adhering to the protestation, was deprived, and confined in the town of Dundee; but as he had obtained a grant of the temporalities of Crossragwell abbey, he was not left without a provision. Simson, who had aggravated the original offence by writing a letter in which he disparaged the English bishops, likewise received sentence of deprivation, and was for several months detained in prison; but on making his submission, he was at length reinstated. A similar sentence was pronounced on Calderwood, who was committed to prison at St Andrews, and was afterwards removed to Edinburgh. The privy council, which long exercised an undefined and despotic jurisdiction, ordained him to be banished from the kingdom for refusing to acknowledge the sentence of the High Commission; and the whole proceedings in this case exhibit a curious example of the arbitrary and iniquitous administration of that period. On giving security to banish himself from the kingdom before the ensuing Michaelmas, and not to return without the royal license, he was released from prison. He accompanied Lord Cranstoun to Carlisle, where that nobleman presented to the king a petition in his favour; but although the suit appears to have been very zealously urged, it was followed by no beneficial result. The king inveighed against Calderwood, and at last repelled the noble baron with his elbow. The application was however renewed after an interval of two hours: his lordship entreated him to permit the petitioner to remain in Scotland till the last day of April, on account of the danger of a winter voyage, and in order to receive his stipend for the current year; but his majesty was graciously pleased to declare, that it was no matter if he begged his bread, and "as for the season of the year, if he drowned in the seas, he might thank God that he hath escaped a worse death:" a princely answer, and full of Christian comfort! The subsequent application of Lord Cranstoun to the privy council, and to the bishops, was attended with no better success; and if they had been more inclined to lenient measures, the unbending spirit of Calderwood, who would neither make an unqualified confession of his supposed errors of conduct, nor promise strict obedience to the new regulations in the church, left very little room to hope for the remission of his sentence.

He continued for a considerable time to linger in his native country; and during this interval he began the publication of his anonymous works in support of the presbyterian cause. In the year 1618 he printed a Latin tract on the polity of the church of Scotland. The general assembly, which met at Perth on the 25th of August, gave a new impulse to his mind; and in 1619 he produced an English work, in which he undertook to demonstrate

the nullity of the assembly itself, and the unlawfulness of its five articles, relating to kneeling at the communion, the observance of festivals, confirmation, private baptism, and private communion. They who hazarded the peace of the church and kingdom by such innovations as these, had not sufficiently reflected on all the consequences which ensued; nor are we disposed to blame the faithful presbyters for their very strenuous opposition to some of the articles of Perth. Kneeling at the communion, for example, may in itself be a very harmless ceremony: but this was not the position of the apostles when our Saviour instituted the sacred rite; and such a position was considered by many of our ancestors as too much connected with the adoration of the host, and the doctrine of transubstantiation. Some of the episcopalians still indulge in certain obsolete speculations as to the eucharist being a feast upon a sacrifice.² A sacrifice requires a priest, a priest can only be ordained by a bishop; and without a bishop, a priest, and an altar of sacrifice, they suppose that no church can stand on a secure foundation. But the character and destiny of churches are not to be decided by earthly judges; and we leave them in the quiet possession of their mystical reveries, which nevertheless we cannot help suspecting of a very intimate connexion with the spirit of popery.

While Calderwood was still lurking in Scotland, an attempt was made to apprehend him at Edinburgh in the house of James Cathkin, a bookseller; but the officers neither found him nor any copies of his obnoxious publication relative to the *Perth Assembly*. Cathkin had visited London in the prosecution of his business; and being immediately taken into custody, he underwent two examinations, one of them in presence of his majesty, who was moved with violent indignation.³ His alleged offence was that of being concerned in printing or publishing the book, and receiving the author into his house. In reference to the people of Edinburgh, whom he had not found sufficiently submissive to the royal will, James uttered the following paternal wish: "The Devill ryve ther soules and bodies all in collops, and cast them in hell!" The worthy bookseller, who conducted himself with manly firmness, was released from prison after having been detained for eight days. Calderwood was in the mean time concealed at Cranstoun, in a secret apartment allotted to him by Lady Cranstoun, who rendered him many services. He afterwards removed from one place to another, till the 27th of August 1619, when he embarked at Newhaven, and sailed for Holland, "with his purse well filled by the wives of Edinburgh."⁴ Where he chiefly resided in that country, we are not informed; but Bishop Guthrie states, "in the time of his exile he had seen the wild follies of the English Brownists in Arnheim and Amsterdam."⁵ His exile may have been attended with some advantages, by enabling him to extend his acquaintance with men of learning, and to collect books in his own department of study. His controversial ardour was still unabated: during his residence in Holland he published various works, and, among the rest, his *Altar of Damascus*. At one period, his enemies supposed him to be dead; and he has recorded a very extraordinary attempt to impose upon the world a recantation fabricated in his name.⁶ "Patrick

¹ Spotswood's Hist. of the Church of Scotland, p. 534.

² See Bishop Jolly's Christian Sacrifice in the Eucharist. Aberdeen, 1831, 12mo. See likewise Dr Geddes's Modest Apology for the Roman Catholics of Great Britain, p. 164. Lond. 1800, 8vo.

³ Of his examination Cathkin has given a curious account, printed in the *Bannatyne Miscellany*, vol. i. p. 199. Edinb. 1827, 4to.

⁴ Calderwood's Hist. p. 750. He imputes this expression to the archbishop of St Andrews.

⁵ Memoirs of Henry Guthrie, late Bishop of Dunkeld, p. 78. edit. Glasg. 1748, 12mo.

⁶ Calderwood's Recantation: or, a tripartite Discourse, directed to sych of the Ministerie, and others in Scotland, that refuse Conformitie to the Ordinances of the Church; wherein the Causes and bad Effects of such Separation, the legall Proceedings against the refractarie, and Nullitie of their Cause, are softly launced, and they lovingly invited to the Vniformitie of the Chvrch. Lond. 1622, 4to.

Scot, a landed gentleman beside Falkland, having wasted his patrimony, had no other means to recover his estate, but by some unlawful shift at court. He set forth a recantation under the name of a banished minister, Mr David Calderwood, who, because of his long sickness before, was supposed by many to have been dead. The king, as he alleged himself to some of his friends, furnished him the matter, and he set the matter down in forme. This course failing, he went over to Holland, and sought the said Mr David in sundrie townes, specially in Amsterdam, in the month of November. It appeareth his purpose was to dispatch the said Mr David. After he had stayed at Amsterdam 20 dayes, and made diligent inquirie, he was informed that the said Mr David was returned home privately to his own native country. How he cused a distressed Englishman after his returning, I passe by. After the death of King James, he set out a pamphlet full of lies, entituled *Vox vera*, but as true as Lucian's *Vera Historia*. Notwithstanding of all his godless and unlawful shifts, he died soon after so poore that he had not wherewith to bear the charges of his burial; but it behoved the bishop of Ross, being then present where he departed, to bear the charges, for the good service he had done to the king and the bishops.¹

From the date of this narrative, Calderwood appears to have returned to Scotland in the year 1624. He was still found to be the most redoubtable champion of presbytery; and after the abolition of episcopacy, he was appointed minister of Pencaitland, in the county of Haddington, but the date of this appointment has not been ascertained. The following statement proceeds from an episcopalian writer: "David Calderwood, a man of great reading and study, but very unhappy in his way of expressing himself, both which appeared in his *Altare Damascenum*. He was at first very factious, and banished the kingdom by King James, yet was afterwards much neglected by that violent party, who judged him too moderate, though, from his book, none would imagine him guilty of it."² Baillie, in relating the proceedings of the general assembly in 1641, remarks, "it was regretted by the moderator that Mr David Catherwood, who deserved so well of our church, was so long neglected. He was recommended to the first commodious room. Likely he shall not be in haste provided. The man is sixty-six years old; his utterance is unpleasant; his carriage about the meetings of this assembly and before, has made him less considerable to divers of his former benefactors."³ Though not a member, he had repeatedly spoken with too much pertinacity. Henderson the moderator treated him with great forbearance, but at length the commissioner commanded him to be silent. In 1643 the assembly appointed Henderson, Calderwood, and Dickson, to prepare a directory for public worship. During the remainder of his life, he continued to take an active part in the affairs of the church; and as firmness may be nearly allied to obstinacy, he appears to have maintained his own opinions with habitual keenness. It was he that introduced the practice, which is now confirmed by long usage, of dissenting from the decision of the assembly, and requiring the protest to be entered in the record. In 1649, an act having been introduced respecting the election of ministers, he proposed that the

right of electing should be vested in the presbytery, leaving to the people the power of declaring their dissent, upon reasons of which it should be competent for the presbytery to judge; but this suggestion was not adopted; and, according to Baillie's statement, "Calderwood entered a very sharp protestation against our act, which he required to be registered. This is the first protestation we heard of in our time; and had it come from any other, it had not escaped censure."⁴

He devoted many years to the preparation of a history of the church of Scotland. In 1648 the general assembly urged him to complete the design, and voted him a yearly pension of eight hundred pounds.⁵ He left behind him an historical work of great extent, and of great value, not indeed as a masterly composition, but as a storehouse of authentic materials for history. The laborious author has incorporated many original documents which are not otherwise preserved, and has recorded an immense multiplicity of facts, which illustrate the civil as well as the ecclesiastical annals of the period to which his work relates. An abridgment, which appears to have been prepared by himself,⁶ was published after his death; but it is much to be regretted that his great work still remains in manuscript. Proposals for printing it were issued many years ago, but the plan did not meet with adequate encouragement; and, unless a similar plan should be adopted by the Bannatyne Club, we despair of seeing it carried into execution. The author's manuscript, which lately belonged to General Calderwood Durham, has been presented to the British Museum. A copy, transcribed under the inspection of Wodrow, is among the archives of the church; another belongs to the library of the university of Glasgow; and, as Dr Mc'Crie has stated, "in the Advocates Library, besides a complete copy of that work, there is a folio volume of it, reaching to the end of the year 1572. It was written in 1634, and has a number of interlineations and marginal alterations, differing from the other copies, which, if not made by the author's own hand, were most probably done under his eye."⁷

Calderwood died at Jedburgh on the 29th of October 1650,⁸ at the age of seventy-five. He appears to have been a man of unbending integrity, fearless in maintaining his opinions, and uniformly consistent in his professions; but as human virtues are never perfect, his decision of character had some tendency to deviate into that obstinacy of humour from which good men are not always exempted. With his honesty and piety he united no small portion of acuteness and learning. He was conversant with the fathers, schoolmen, and canonists, as well as the more recent theologians; and the shrewdness of his understanding enabled him to apply his learning with due effect.

His works are numerous; and as they were almost all published without the author's name, it is not easy to form a complete and accurate catalogue. The place of printing is omitted in all the original editions, but several, if not most of them, appear to have been printed in Holland. The following is a list of publications which we believe may be safely ascribed to Calderwood.

1. *De Regimine Ecclesiæ Scoticanæ brevis Relatio*. 1618, 8vo.—To this tract an answer was published by Archbishop Spotswood, under the title of "*Refutatio Li-*

¹ Calderwood's Hist. of the Church of Scotland, p. 302.

² Middleton's Appendix to Spotswood's Hist. of the Church of Scotland, p. 20.

³ Baillie's Letters and Journals, vol. i. p. 311.

⁴ Baillie, vol. ii. p. 340.

⁵ See Dr Mc'Crie's Appendix to the Memoirs of Veitch and Brysson, p. 495, 501.

⁶ Mc'Crie's Life of Knox, vol. i. p. vi.—Some of his papers are preserved among Wodrow's MSS. in the Advocates Library. Two original letters from John Paget to Calderwood occur in M. 6. 9. No. 107-8.

⁷ Bannatyne Miscellany, vol. i. p. 205. Baillie, in a passage already quoted, mentions that Calderwood was sixty-six years old in 1641.

⁸ Baillie, vol. ii. p. 307.

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belli de Regimine Ecclesiæ Scoticanæ." Lond. 1620, 8vo. Calderwood replied in the *Vindiciæ* subjoined to his *Altare Damascenum*.

2. A Solution of Doctor Resolvts his Resolutions for Kneeling. 1619, 4to.—This is an answer to a book written by David Lindsay, D.D. who became bishop of Brechin, and afterwards of Edinburgh: "The Reasons of a Pastors Resolution, touching the reuerend Receiuing of the holy Communion." Lond. 1619, 8vo.

3. Perth Assembly, &c. 1619, 4to.—This publication was followed by "A true Narration of all the Passages of the Proceedings in the Generall Assembly of the Church of Scotland, holden at Perth the 25 of August *anno Dom.* 1618: wherein is set downe the copy of his Maiesties Letters to the said Assembly; together with a iust Defence of the Articles therein concluded, against a seditious Pamphlet. By Dr Lyndesay, Bishop of Brechen." Lond. 1621, 4to.

4. A Defence of our Arguments against Kneeling in the act of Receiuing the sacramentall Elements of Bread and Wine, impugned by Mr Michelson. 1620, 8vo. 1638, 8vo.—This is an answer to a book entitled, "The Lawfulness of Kneeling in the act of Receiuing the Sacrament of the Lordes Supper. Written by M. Iohn Michaelson, Preacher of Gods Word at Byrnt-Yland." Sainct Andrewes, 1620, 8vo. In his preface, Calderwood remarks of his antagonist, "he hath given so notable prooffe of profound knowledge in diuinitie, and subtiltie in handling this controversie in this worthie work of his, that the bishop of St Andros (a man as voyd of learning as of good manners) hath made him a doctor." This is not a very decent manner of treating Spotswood, who was neither destitute of talents nor of learning.

5. A Dialogue betwixt Cosmophilus and Theophilus anent the urging of new Ceremonies upon the Kirke of Scotland. 1620, 8vo.

6. The Speech of the Kirk of Scotland to her beloved Children. 1620, 8vo.

7. Quaeres concerning the State of the Chvrch of Scotland. 1621, 8vo. 1638, 8vo.

8. The Altar of Damascus; or the Patern of the English Hierarchie and Church-Policie obtruded upon the Church of Scotland. 1621, 8vo.

9. The Course of Conformitie, as it hath proceeded, is concluded, should be refused. 1622, 4to.

10. A Reply to Dr Mortons generall Defence of the three nocent Ceremonies, &c. 1622, 4to.

11. A Reply to Dr Mortons particular Defence of the three nocent Ceremonies, &c. 1623, 4to.—Dr Morton, who was successively bishop of Chester, Lichfield, and Durham, had published "A Defence of the Innocencie of the three Ceremonies of the Chvrch of England; viz. the Surplice, Crosse after Baptisme, and Kneeling at the Receiuing of the blessed Sacrament." Lond. 1619, 4to. This is the second impression.

12. *Altare Damascenum; seu Politia Ecclesiæ Anglicanæ obtrusa Ecclesiæ Scoticanæ, a formalista quodam delineata, illustrata et examinata studio et opera Edwardi Didoclavii. Cui locis suis inserta Confutatio Paræneseos Tileni ad Scotos, Genevensis, ut ait, Disciplinæ Zelotas:*

et adjecta Epistola Hieronymi Philadelphi de Regimine Ecclesiæ Scoticanæ; ejusque Vindiciæ contra Calumnias Johannis Spotsuodi, Fani Andreæ Pseudoarchiepiscopi, per anonymum. 1623, 4to. Lugd. Bat. 1708, 4to.—The application of the title may be learned from 2 Kings, xvi. 10. The work itself, which is an enlargement of his English *Altar of Damascus*, contains a most formidable attack on the polity of the church of England; and, as Mr Peirce remarks, "the patrons of episcopacy have never yet answer'd it, how much soever their cause requires it."¹ A late writer, by some unaccountable inadvertency, has stated that "this book is a refutation of Linwood's Description of the Policy of the Church of England." William Lyndewode, an eminent canonist who became bishop of St David's, could certainly write no book about the protestant church of England, inasmuch as he died in 1446, nearly a century before the reformation. He is the compiler of a well-known work, entitled *Provinciale, seu Constitutiones Angliæ*, to which Calderwood frequently refers, among many other juridical and theological authorities. One of the books which he undertakes to refute bears the title of "Parænesis ad Scotos, Genevensis Disciplinæ Zelotas, autore Dan. Tilenio Silesio." Lond. 1620, 8vo. Another able refutation was written by Sir James Semple: "Scoti *τῶν τυχόντων* Paraclesis contra Danielis Tileni Silesii Parænesin ad Scotos, Genevensis Disciplinæ Zelotas, conscriptam: cujus prima pars est, de Episcopali Ecclesiæ Regimine." Anno 1622, 4to.

13. An Exhortation of the particular Kirks of Christ in Scotland to their sister Kirk in Edinburgh. 1624, 8vo.

14. An Epistle of a Christian Brother, exhorting an other to keepe himselfe vndefiled from the present Corruptions brought in to the Ministration of the Lords Supper. 1624, 8vo.

15. A Dispvte vpon Communicating at ovr confused Communions. 1624, 8vo.

16. The Pastor and the Prelate; or Reformation and Conformitie shortly compared by the Word of God, by Antiquity and the Proceedings of the ancient Kirk, &c. 1628, 4to.

17. A Re-examination of the five Articles enacted at Perth *anno* 1618; to wit, concerning the Communicants Gesture in the act of Receaving, the Observation of Festivall Dayes, episcopall Confirmation or Bishopping, the Administration of Baptisme and the Supper of the Lord in privat Places. 1636, 4to.

18. The Re-examination of two of the Articles abridged; to wit, of the Communicants Gesture in the act of Receaving, Eating, and Drinking; and the Observation of Festivall Dayes. 1636, 8vo.

19. An Answer to M. I. Forbes of Corse his Peaceable Warning. 1638, 4to.—This is an answer to a tract written by Dr Forbes, professor of divinity in King's College, Aberdeen: "A peaceable Warning to the Subjects in Scotland; given in the yeare of God 1638." Aberdene, 4to.

20. The true History of the Church of Scotland, from the beginning of the Reformation, unto the end of the Reigne of King James VI. &c. 1678, fol. (x.)

¹ Peirce's Vindication of the Dissenters, p. 176, second edit. Lond. 1718, 8vo.



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belli de Rebus et Personis Scotticis. Lond. 1628, non Calderwood's edition in the *Index* subjected to his *Altera Emendatione*.

8. A *Tractate of Doctor Beucharts his Resolutions for Kneeling*. 1620, 4to.—This is no answer to a book written by David Lindsay, D.D., who became bishop of Brechin, and afterwards of Edinburgh: "The Reasons of a Patient Dissimulation, touching the Reverend Receding of the Holy Communion." Lond. 1618, 8vo.

9. *Perth Assembly, viz. 1619, 4to.*—This publication was followed by, "A true Narration of all the Passages of the Proceedings in the General Assembly of the Church of Scotland, holden at Perth the 25 of August anno Dom. 1619," wherein it was shown the copy of his Majesty's Letters to the said Assembly, together with a last Defence of the Articles therein concluded, against a malicious Pamphlet, by Dr. Lindsay, Bishop of Brechin." Lond. 1621, 4to.

10. A *Refutation of our Arguments Against Kneeling in the act of receiving the sacramental Elements of Bread and Wine, Argument by Mr. Michelson*. 1622, 8vo. 1628, 8vo.—This answer to a book entitled, "The Lawfulness of kneeling in the act of receiving the Sacrament of the Eucharist," written by M. John Michelson, Preacher in Paris, and at Brevin, France. Sancti Andree, 1620, 4to. In the preface Calderwood remarks of his antagonist, "he hath given us notable proofs of profound knowledge in doctrine, and subtiltie in handling this controversy, and worthy work of his, that the bishop of St. Asaph (a man as myd of learning as of good manners) hath called him a doctor." This is not a very decent translation of reading Spotswood, who was neither destitute of learning nor of learning.

11. A *Dialogue betwixt Cereophorus and Theophilus about the urging of new Ceremonies upon the Kirke of Scotland*. 1622, 8vo.

12. *The Speech of the Kirke of Scotland to her beloved Children*. 1622, 8vo.

13. *Queries concerning the State of the Church of Scotland*. 1623, 8vo. 1675, 8vo.

14. *The Altar of Damascus; or the Patens of the New Law, Damascus and Church-Politic obtained upon the Church of Scotland*. 1621, 8vo.

15. *The Cause of Confirmation, as it hath proceeded, is concluded, should be refused*. 1622, 4to.

16. *A Reply to Dr. Morton's general Defence of the three ancient Ceremonies, &c.* 1622, 4to.

17. *A Reply to Dr. Morton's particular Defence of the three ancient Ceremonies, &c.* 1622, 4to.—Dr. Morton who was successively bishop of Chester, Lichfield, and Durham, had published "A Defence of the lawfulness of the three Ceremonies of the Church of England, viz. the Surplice, Confirmation, Baptism, and Kneeling at the receiving of the blessed Sacrament." Lond. 1619, 4to. This is the second impression.

18. *Altera Emendatione; seu Pictura Ecclesie Anglicane, Aegypti Ecclesie Scotice, a formalis quidam Descriptio, illustrata et examinata studio et opera Edwardi Diihachii. Col locis suis sacris Confessio's Paternice. Tamen ad Scotos Generosius, et ad Discipulos Idem;*

et adjuncta Epistola Hieronymi Philadelphi de his Ecclesiis Scotticis; cumque Vinculis contra Calv. Johann. Spanheim, Paul. Andreæ Pictoribus, &c. per consensum. 1628, 4to. Lond. Ed. 1675, 8vo.

applications of the title may be learned from 3 & 4 p. 10.

19. *The work itself, which is an enlargement of the libell *Altera Emendatione*, contains a most formidable attack on the policy of the church of England, and a severe reproof of the patrons of episcopacy have answered it, how much sooner than could be expected by some late writers, by some unaccountable inadvertence, so that "this book is a refutation of Calderwood's position of the Policy of the Church of England."*

Lindsay, an eminent minister who became bishop of St. David's could certainly write no book about the ancient church of England, inasmuch as he died nearly a century before the reformation. He was

author of a well-known work, entitled *Præmissa, &c. admodum Anglica*, in which Calderwood frequently among many other juridical and theological errors.

One of the books which he undertakes to refute is entitled "Pædagogus, &c. Scotos, Generosius Descriptio, autem Dan. Terno Silesio." Lond. 1624, 4to.

Other able refutation was written by Sir James Lindsay, "Ecclesiæ regiorum Pædagogus contra Davidis Th. Pædagogum ad Scotos, Generosius Descriptio, &c. scriptum; cujus prima pars est, de Episcopatu &c. Begonia." Anno 1624, 4to.

20. *An Exhortation of the particular Kirke of Scotland to their sister Kirke in Edinburgh*. 1624, 4to.

21. *An Epistle of a Christian Brother, exhorting other to keepe himselfe undefiled from the perversions brought in to the Ministration of the Last Supper*. 1624, 8vo.

22. *A Dispute upon Communicating at set times* 1624, 8vo.

23. *The Pastor and the Peclate; or Reformation of Confirmation shortly composed by the Word of Antiquity and the Proceedings of the ancient Kirke*. 1625, 4to.

24. *A Re-examination of the five Articles of Perth anno 1618; to wit, concerning the Communion, the act of receiving, the Observance of the three Days, episcopall Confirmation or Bishop's Administration of Baptism and the Supper of the Lord in privat Places*. 1626, 4to.

25. *The Re-examination of two of the Articles, to wit, of the Communicants Gesture in the receiving, Eating, and Drinking; and the Observance of the Festival Dayes*. 1626, 8vo.

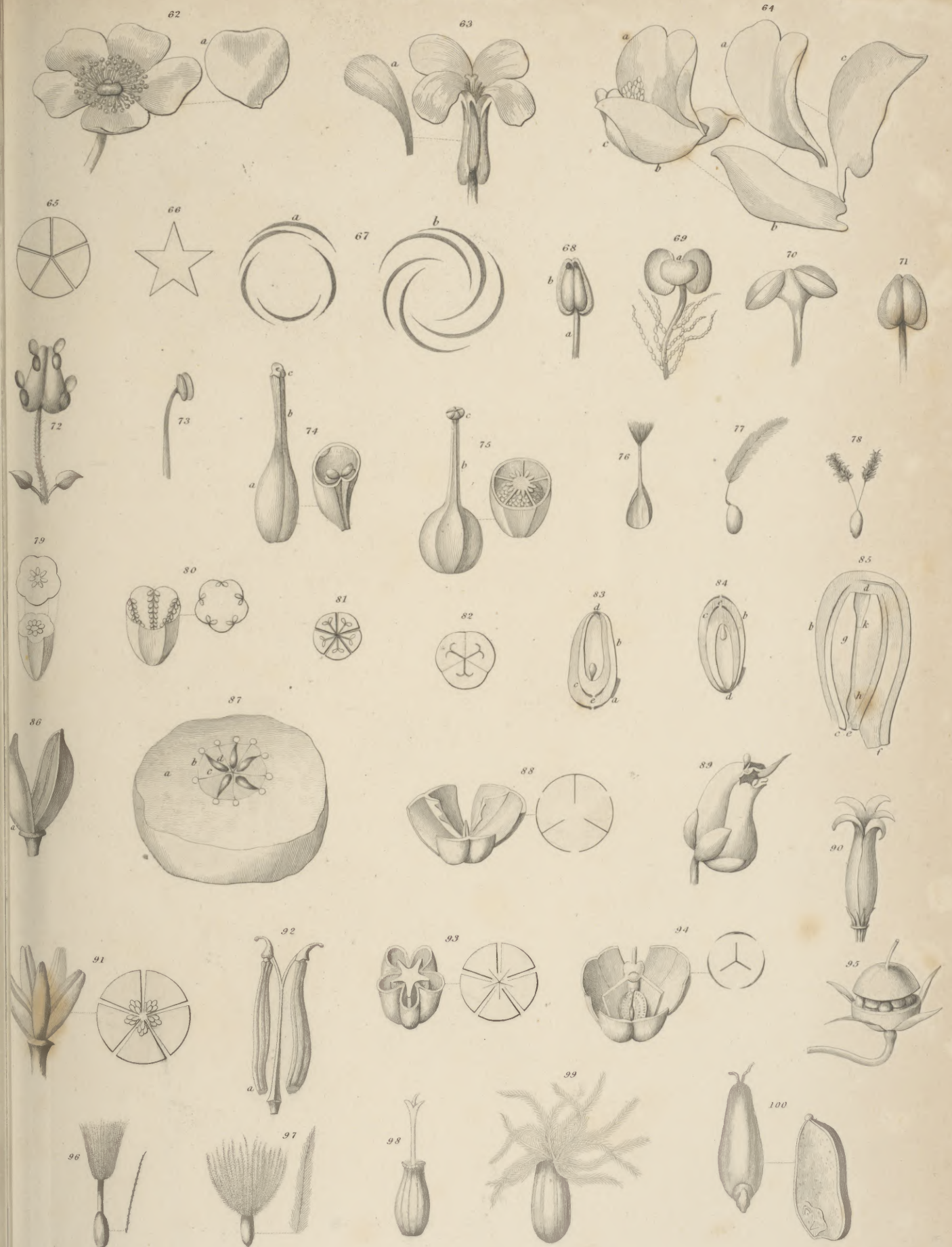
26. *An Answer to M. I. Forbes of Cornhill, a peccable Warning*. 1628, 4to.—This is an answer written by Dr. Forbes, professor of divinity in Glasgow, Aberdeen: "A peccable Warning is now in Scotland, given in the year of God 1628." 4to.

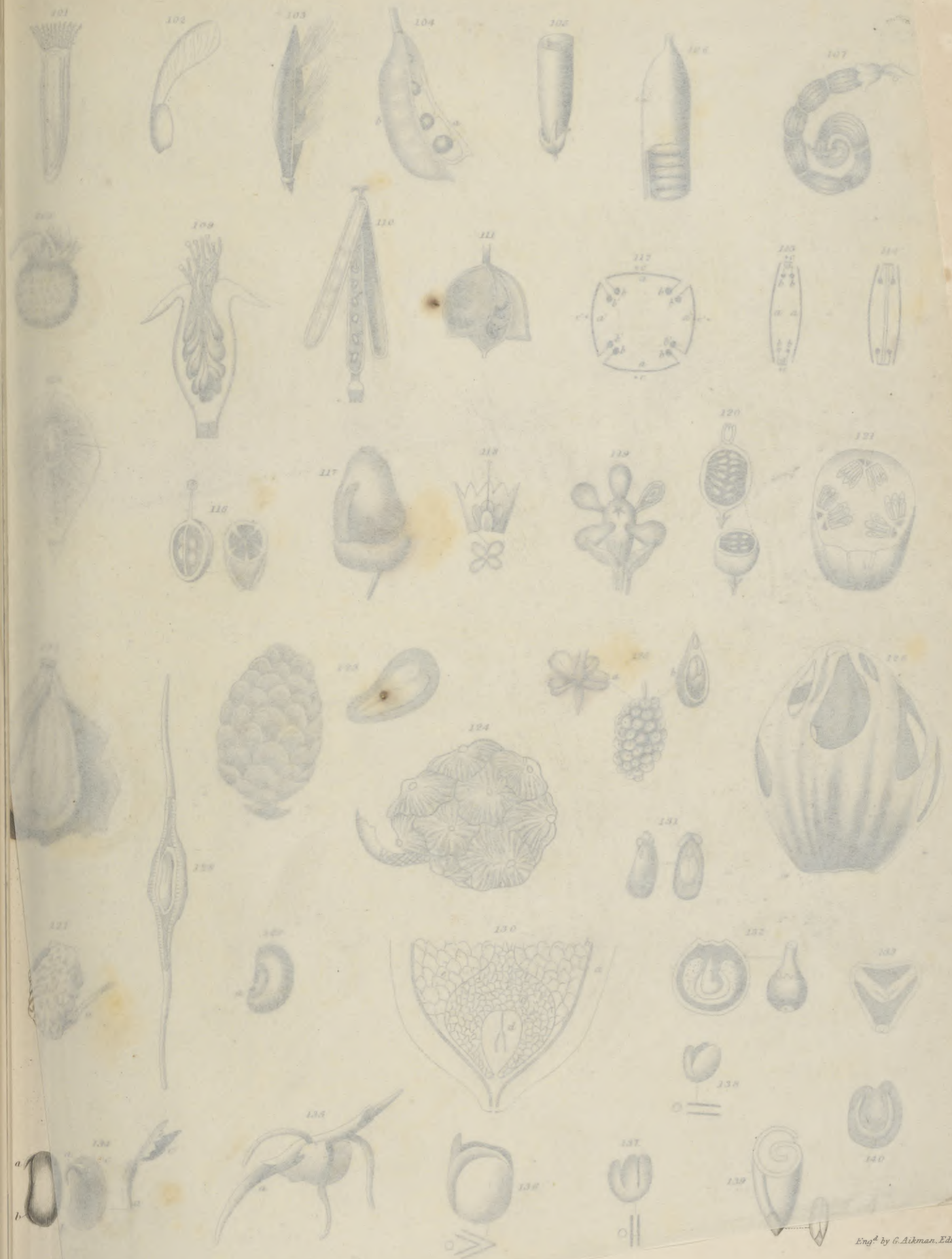
27. *The true History of the Church of Scotland, from the beginning of the Reformation, unto the death of King James VI. &c.* 1673, fol.

* *Private Emendation of the Doctors*, p. 173, second edit. Lond. 1710, 8vo.















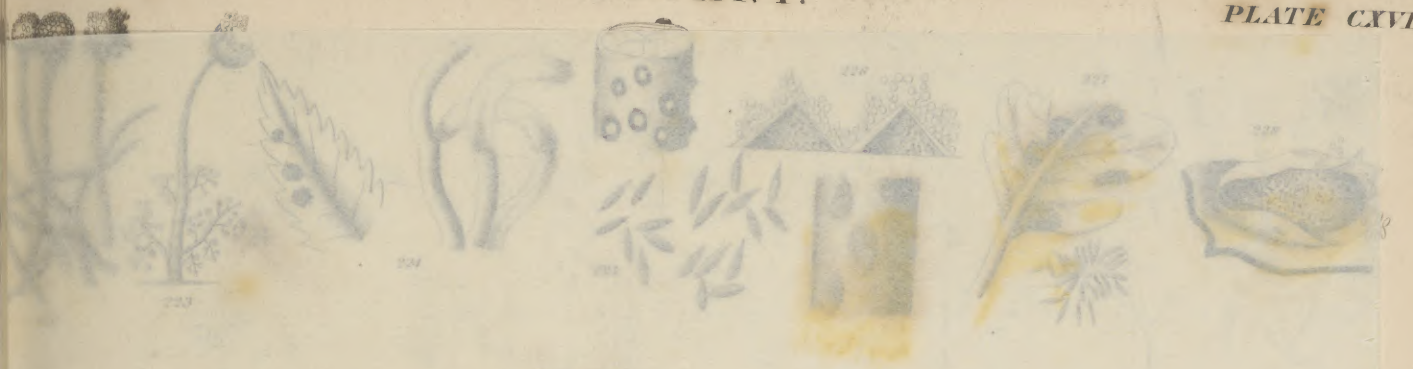


Fig. 8.



Fig. 7.



Fig. 3.



Fig. 5.



Fig. 10.



Fig. 4.



Fig. 1.

Calandrinia pilosiuscula

Fig. 1 by A. J. J. J.



Calandrinia pilosiuscula.

Eng^d by G. Aikman, Edin^g



Viola hederacea







Fig. 1.

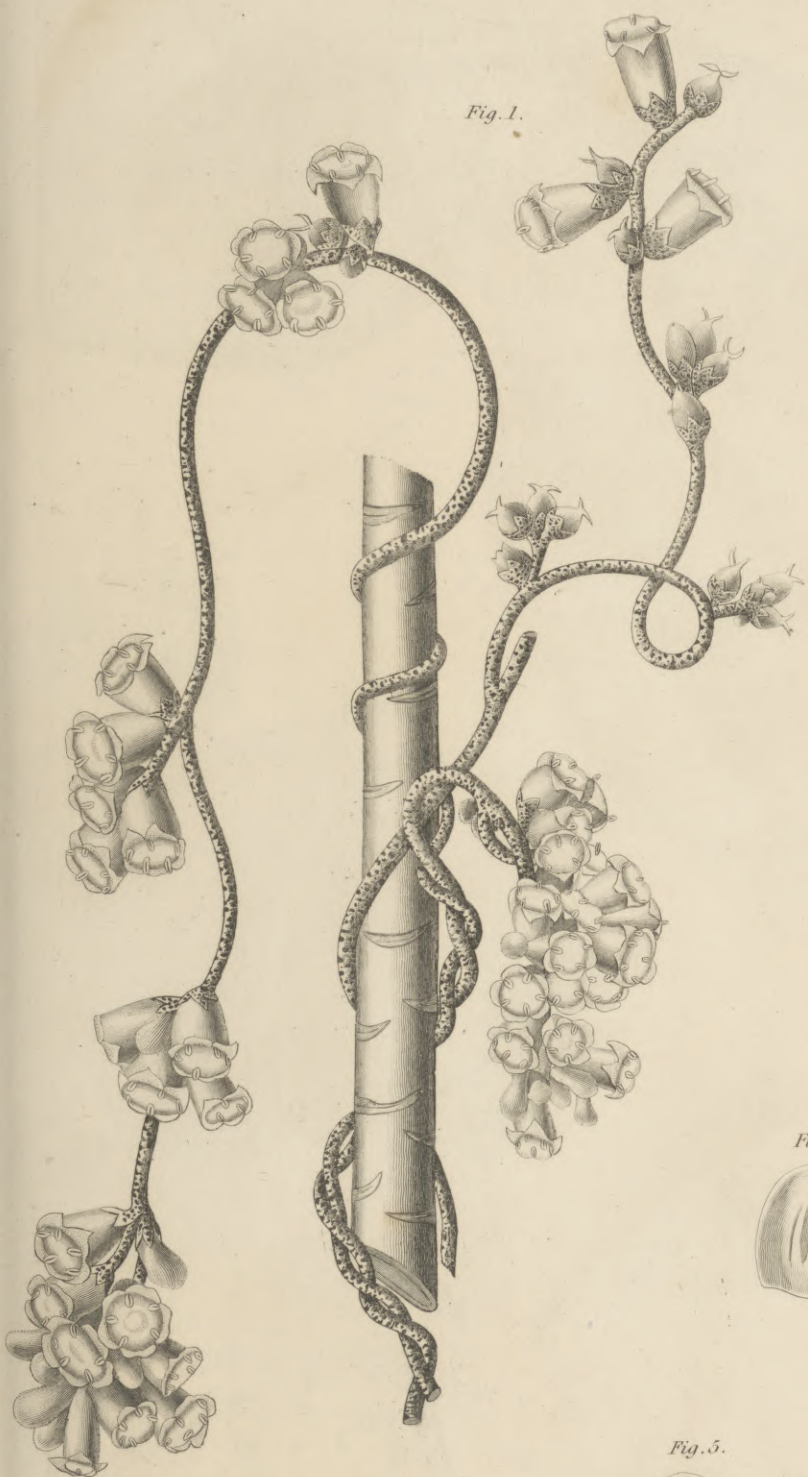


Fig. 3.



Fig. 2.

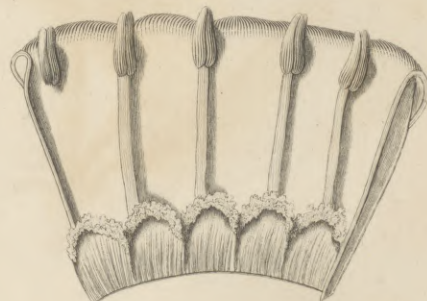


Fig. 7.



Fig. 8.



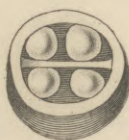
Fig. 5.



Fig. 6.



Fig. 4.





Myristica officinalis.
(Nutmeg.)



Euphorbia hypericifolia.

Fig. 1 to 10. Edin.

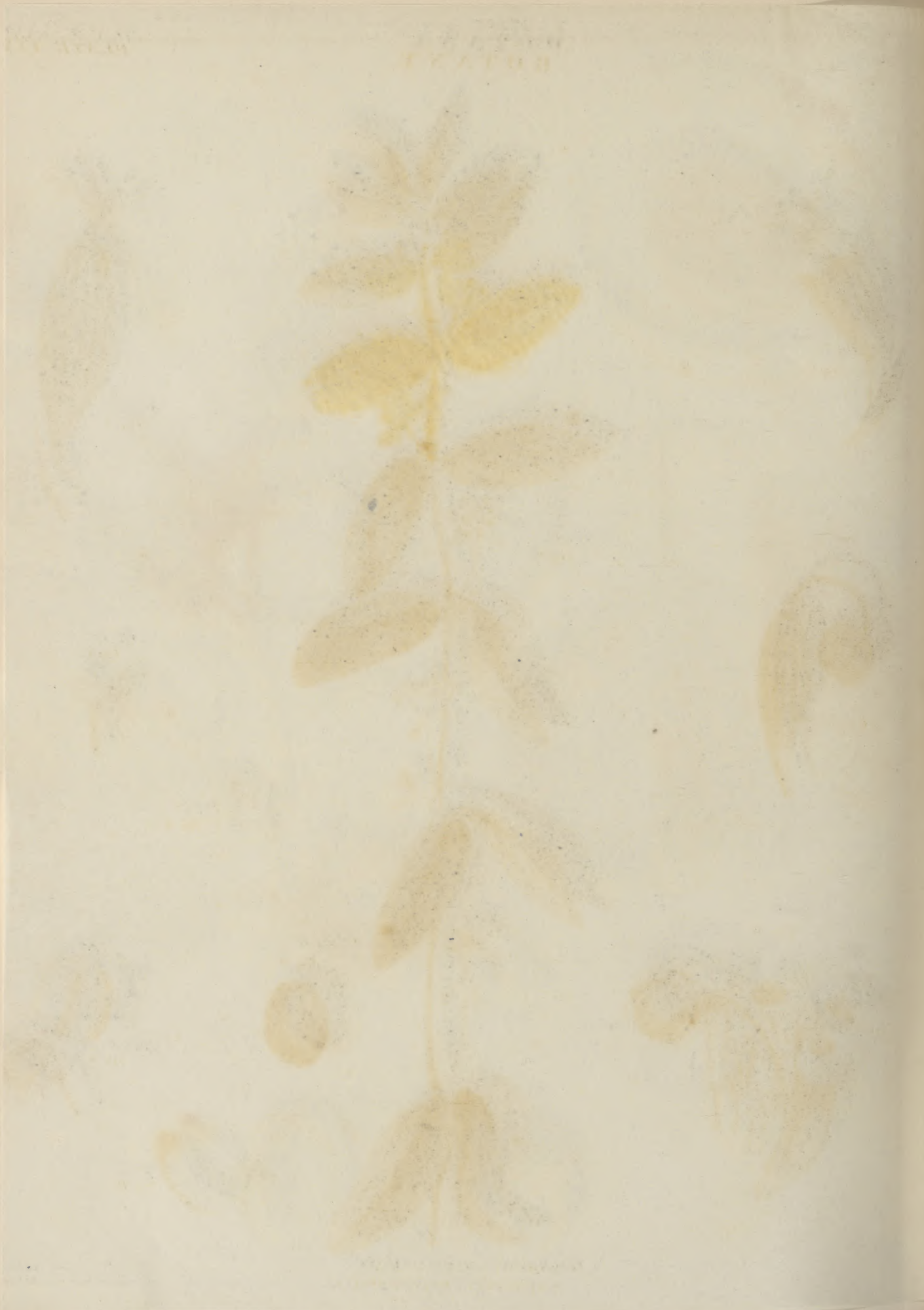




Fig. 2.



Fig. 1.



Fig. 4.



Fig. 5.



Fig. 7.



Fig. 6.

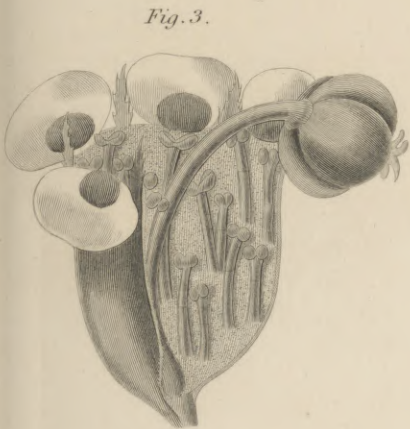


Fig. 3.



Fig. 9.



Fig. 8.



Fig. 10.

Euphorbia hypericifolia.

Eng^d by G. Aikman, Edin^r

Janipha Manchot
(Mandula or Taphura plant)

Eschscholzia Californica





Eschscholzia Californica.

Janipha Manihoti.
(*Cassida* or *Tapioca* plant.)

Eng.^d by G. Abner, Edin.^r



Fig. 1.



Fig. 4.



Fig. 3.



Fig. 8.



Fig. 9.

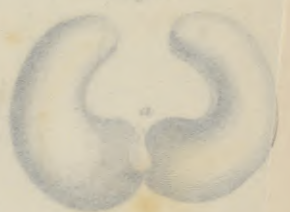


Fig. 7.



Anacardium Occidentale.
(Cashew Nut Tree.)

Engl. & Pr. Botan. Edin.

Fig. 1.



Fig. 2.

Fig. 4.



Fig. 5.



Fig. 6.



Fig. 7.



Fig. 8.



Fig. 9.



Anacardium Occidentale.
(Cashew Nut Tree.)

Eng^d by G. Aikman, Edin^r

Fig. 3.

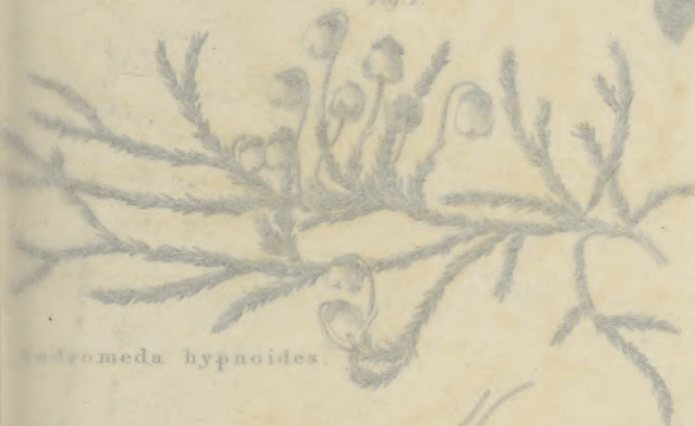


Fig. 5.



Fig. 1.

Fig. 1*



Andromeda hypnoides



Fig. 2.



Fig. 6*



Fig. 4*



Fig. 3*



Fig. 7*



Fig. 6.



Fig. 7.

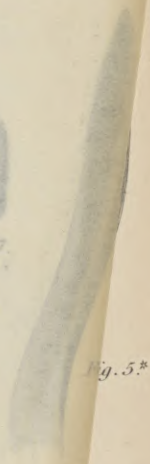


Fig. 5*

Fig. 8.



Fig. 4.

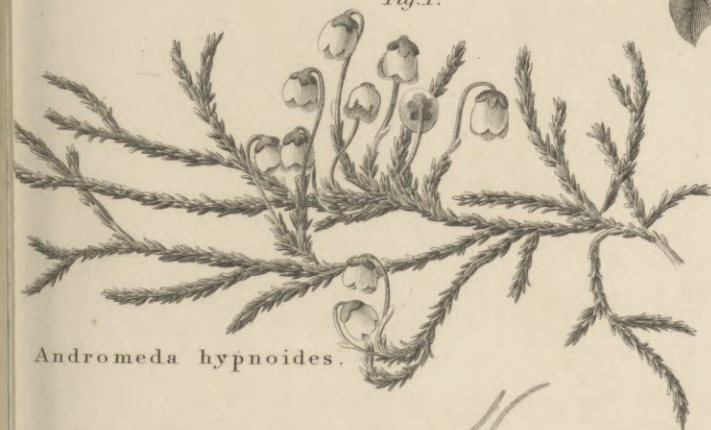
Carica Papaya
(Papaw Tree)

Fig. 3.



Fig. 5.

Fig. 1.*



Andromeda hypnoides.

Fig. 1.



Fig. 2.



Fig. 6.*

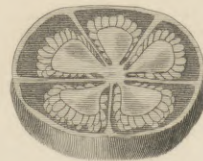


Fig. 7.*



Fig. 6.



Fig. 7.

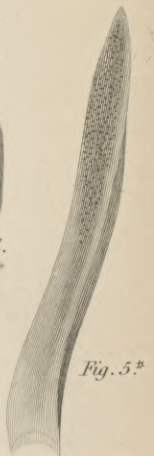


Fig. 5.*



Fig. 4.*



Fig. 3.*

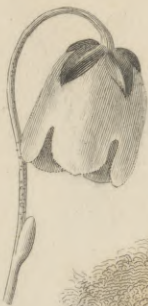


Fig. 2.*

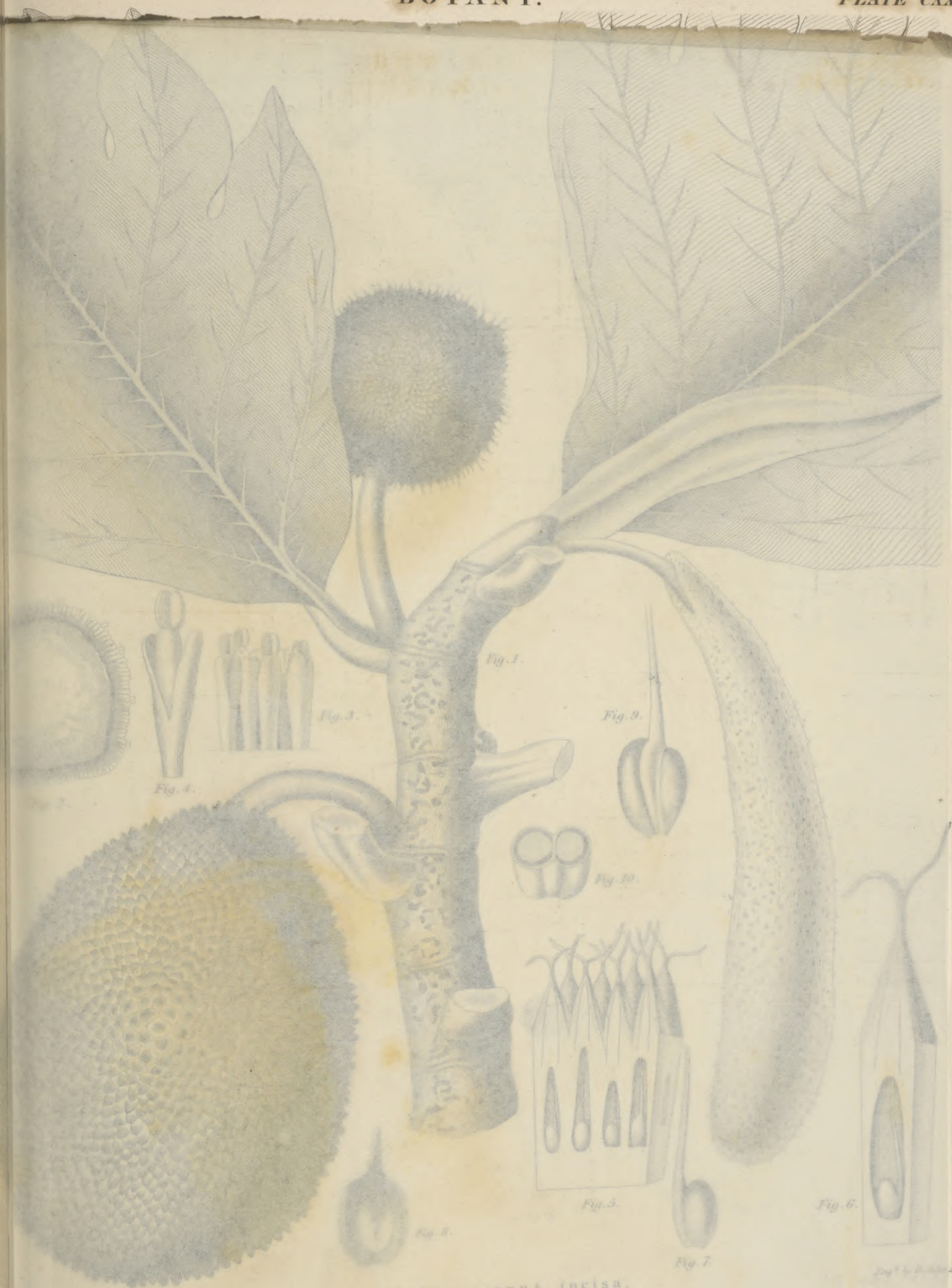


Fig. 8.



Fig. 4.

Carica Papaya.
(Papaw Tree.)



Arctostaphylos uva-ursi,
Bearberry.

Fig. 1 by P. de la Roche, Edin.



Artocarpus incisa.
(Bread Nut)

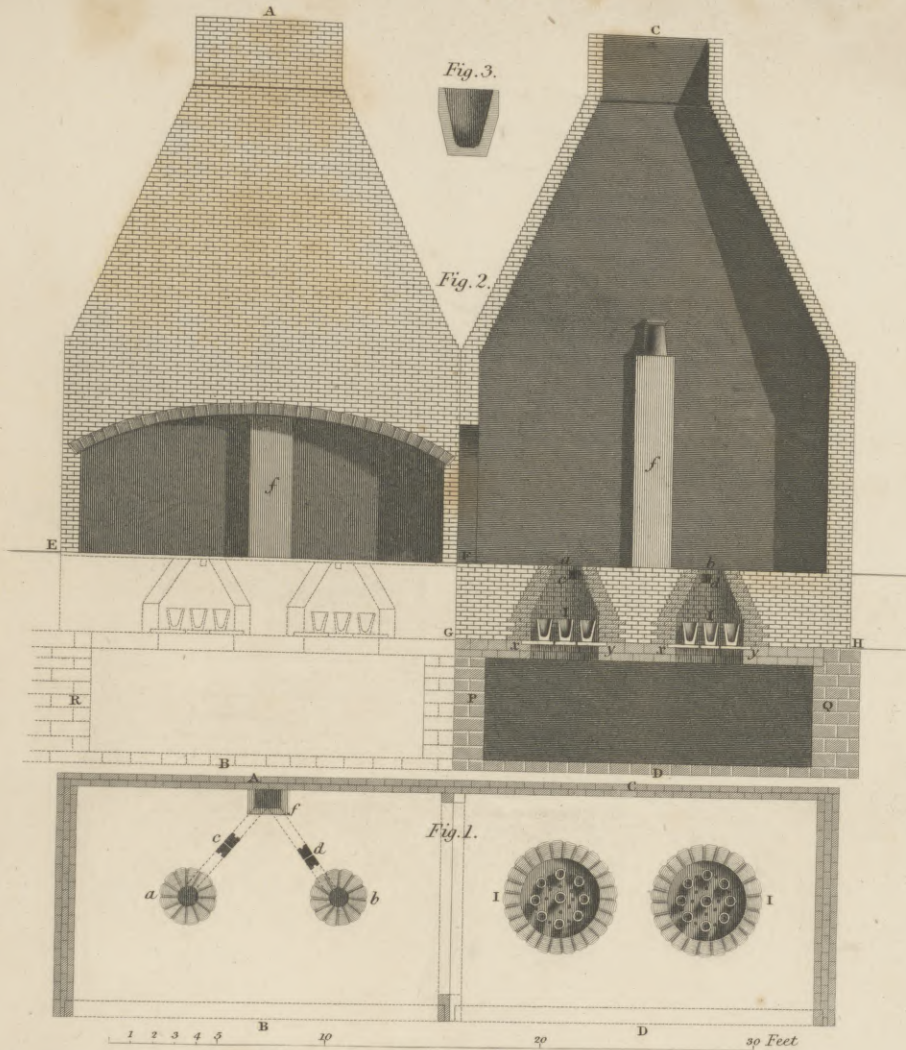
Cycas circinalis.



Cycas circinalis.

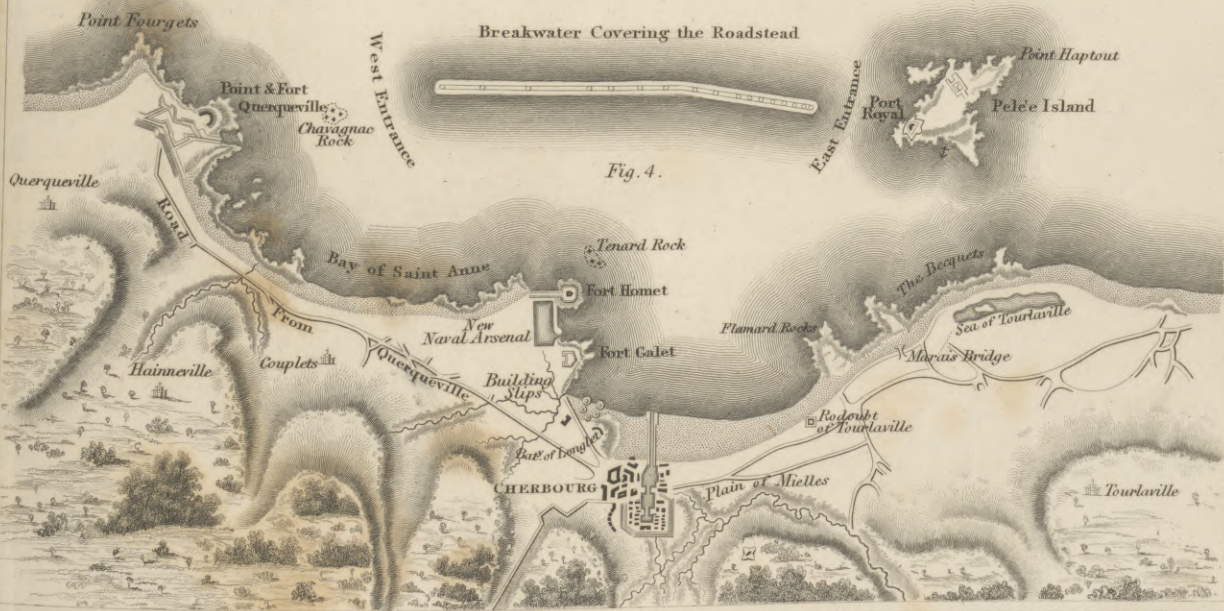


BREAKWATER.

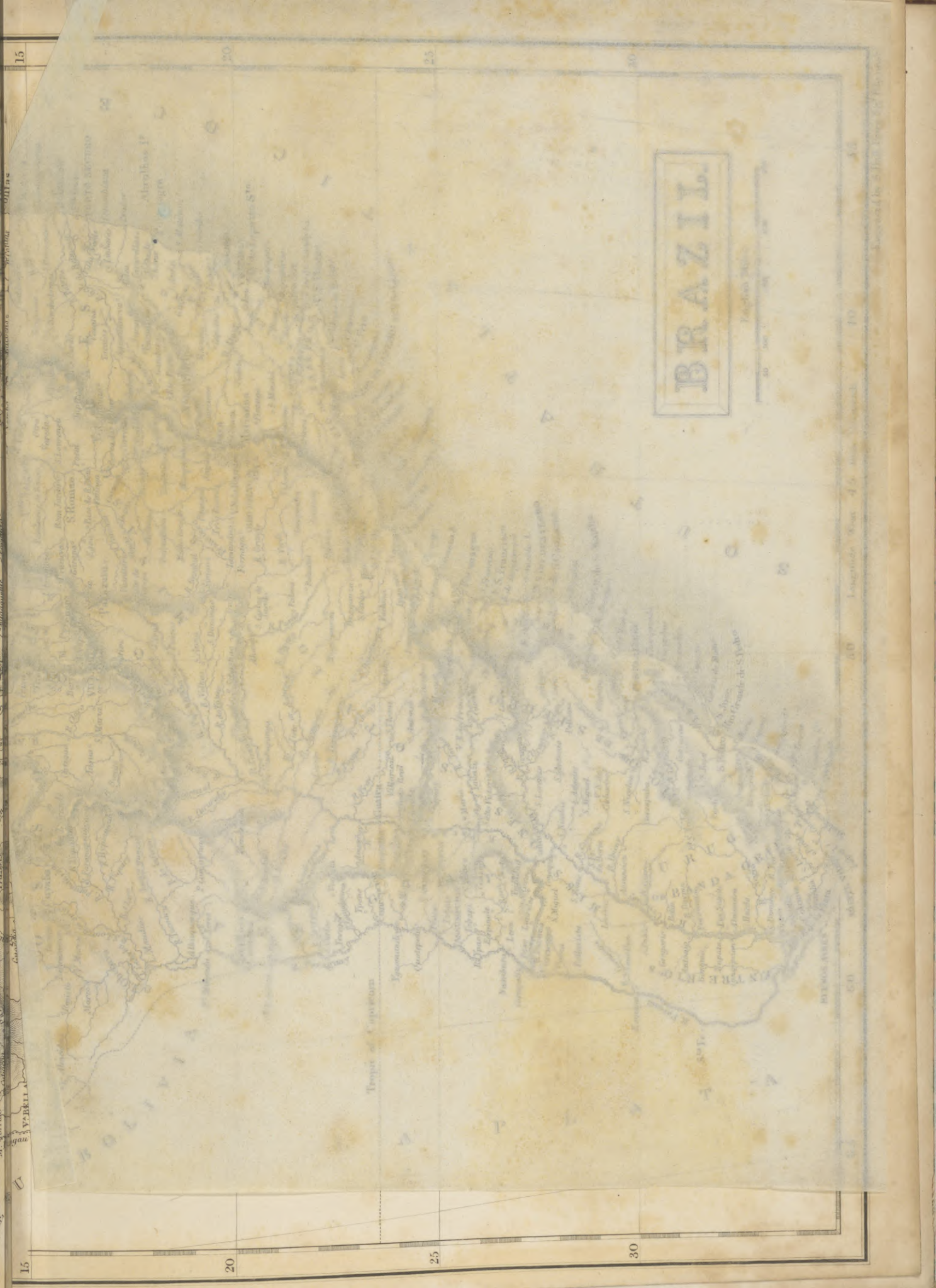


BREAKWATER.

A PLAN of CHERBOURG with the BREAKWATER and the NEW DOCK YARD.







BREAKWATER.

PLATE CXXVIII.

SECTION & STERN VIEWS of STONE VESSELS.

Fig. 1.

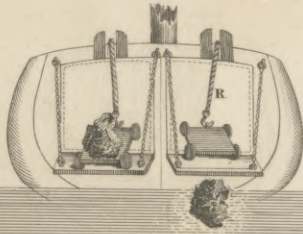
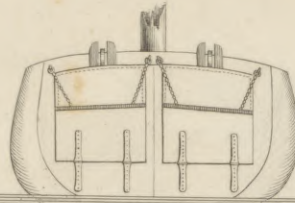
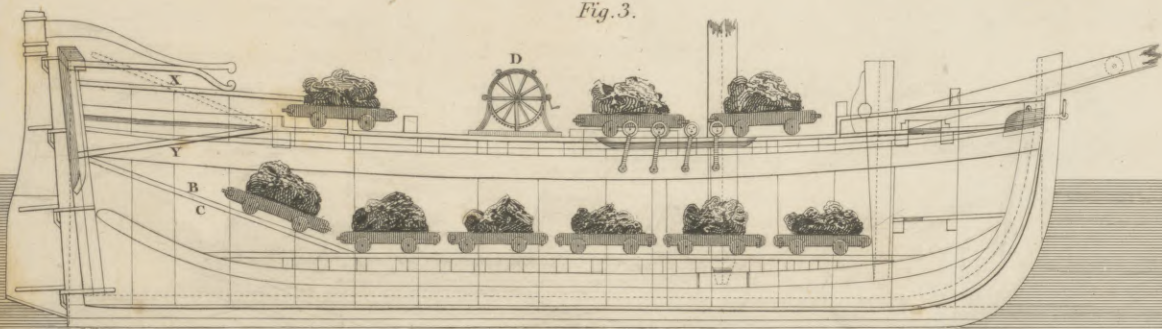


Fig. 2.



5 10 15 20 Feet

Fig. 3.



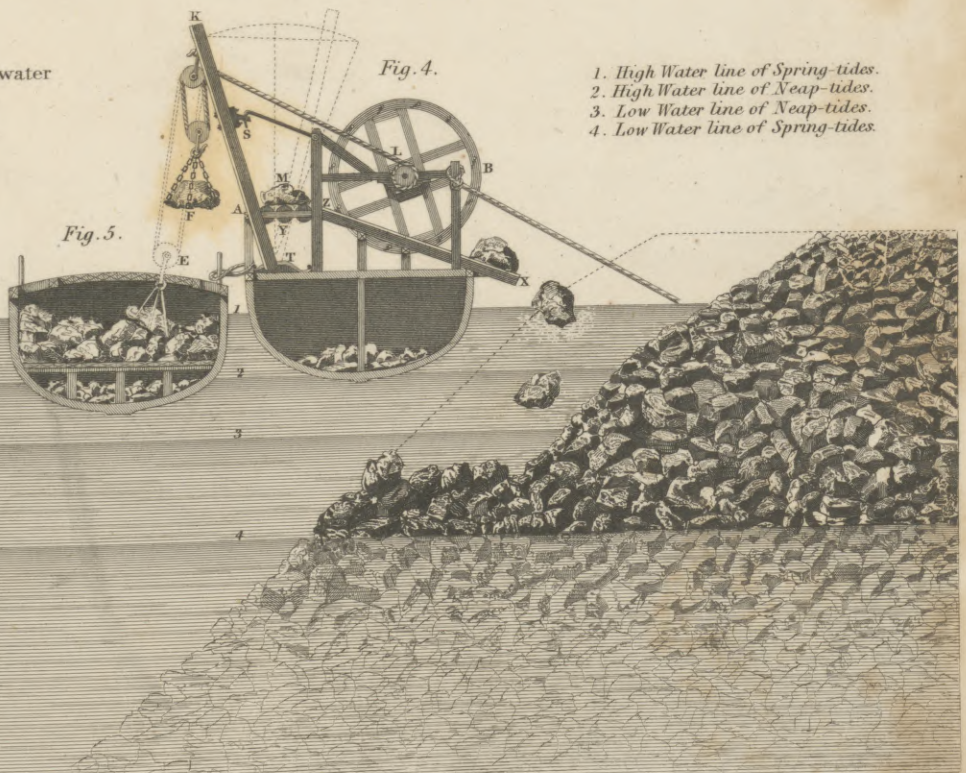
Machinery Employed to Case the Breakwater with Large Blocks of Stone.

6 5 4 3 2 1 0 1 2 Toises.

Fig. 4.

1. High Water line of Spring-tides.
2. High Water line of Neap-tides.
3. Low Water line of Neap-tides.
4. Low Water line of Spring-tides.

Fig. 5.



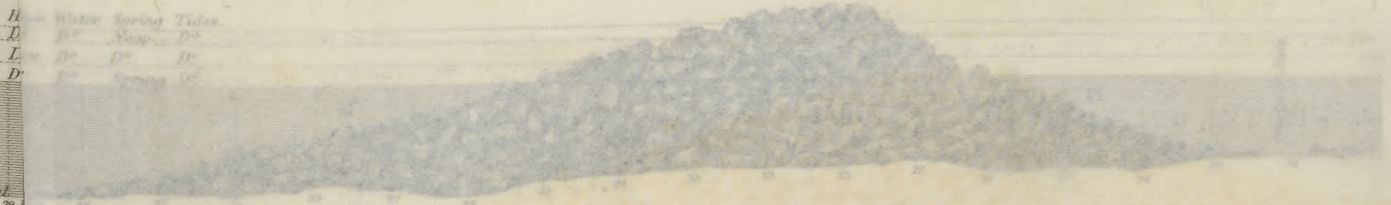
BREAKWATER.

PLATE CXXII.

SECTION OF PLYMOUTH SOUND.



TRANSVERSE SECTION of the FINISHED PART of the BREAKWATER.



Eng'd by G. J. [illegible]

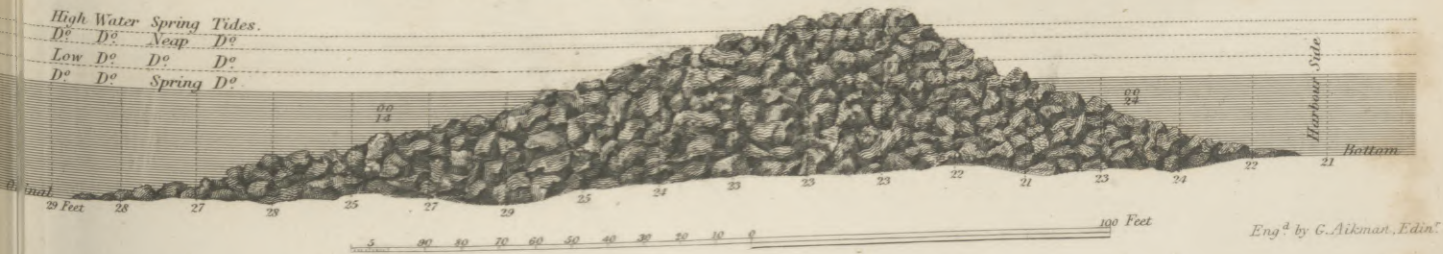
BREAKWATER.

PLATE CXXIX.

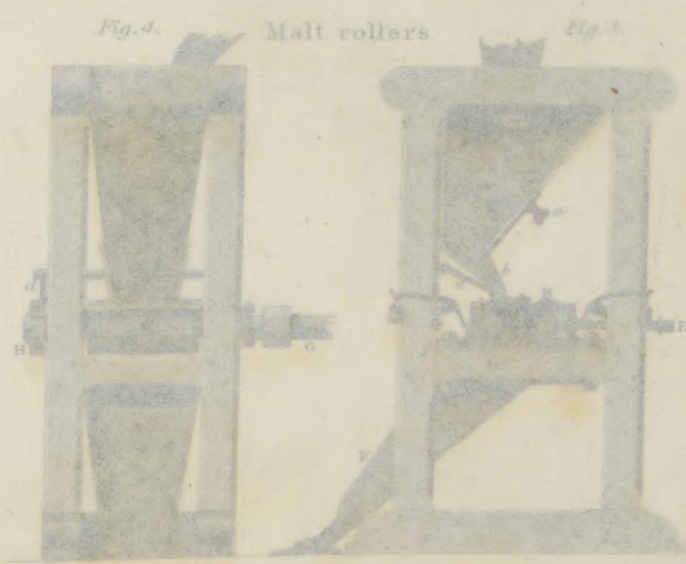
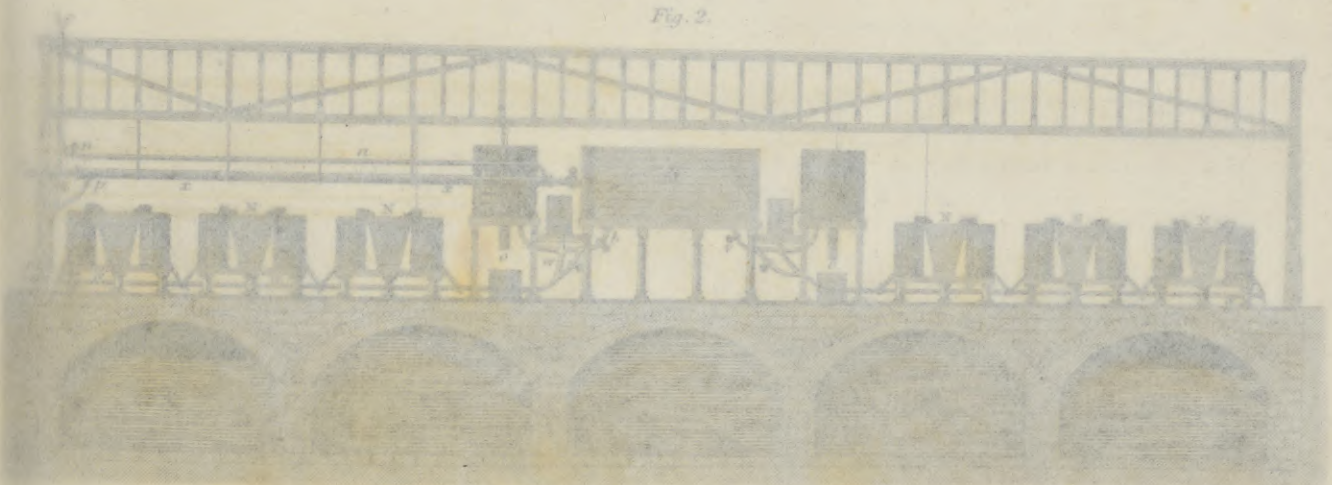
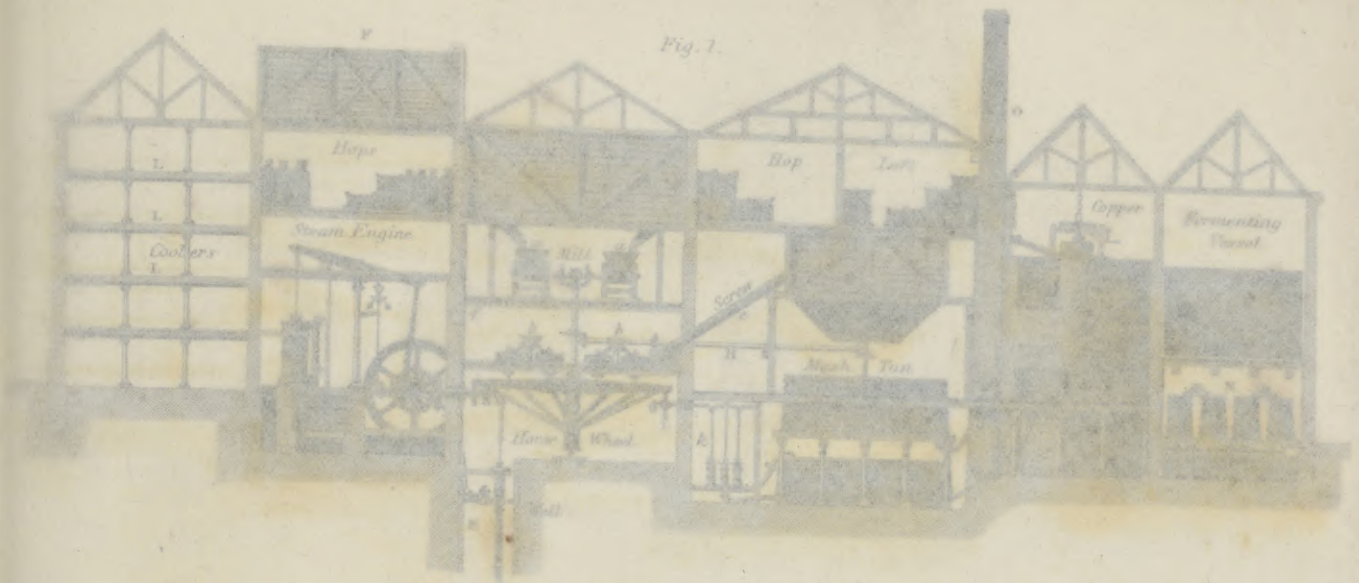
SKETCH OF PLYMOUTH SOUND.

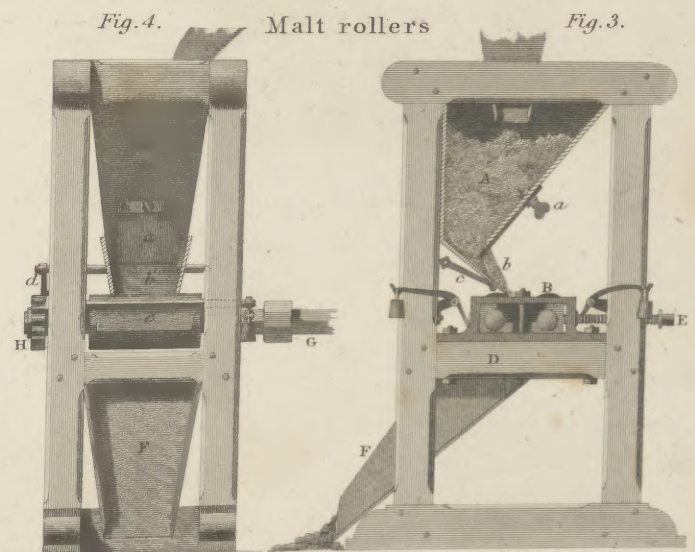
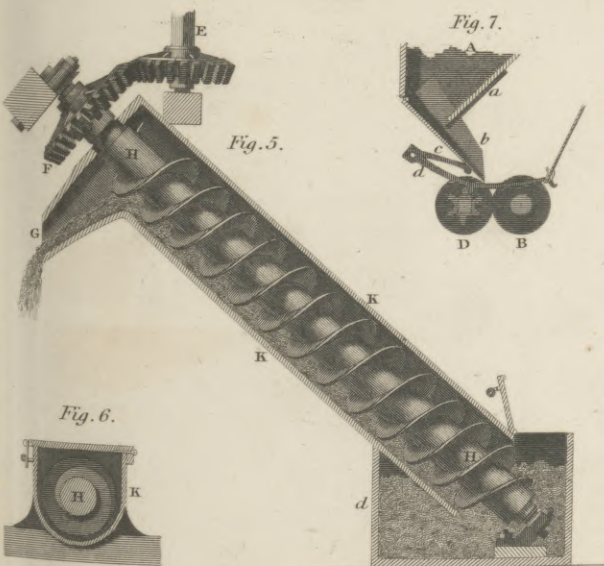
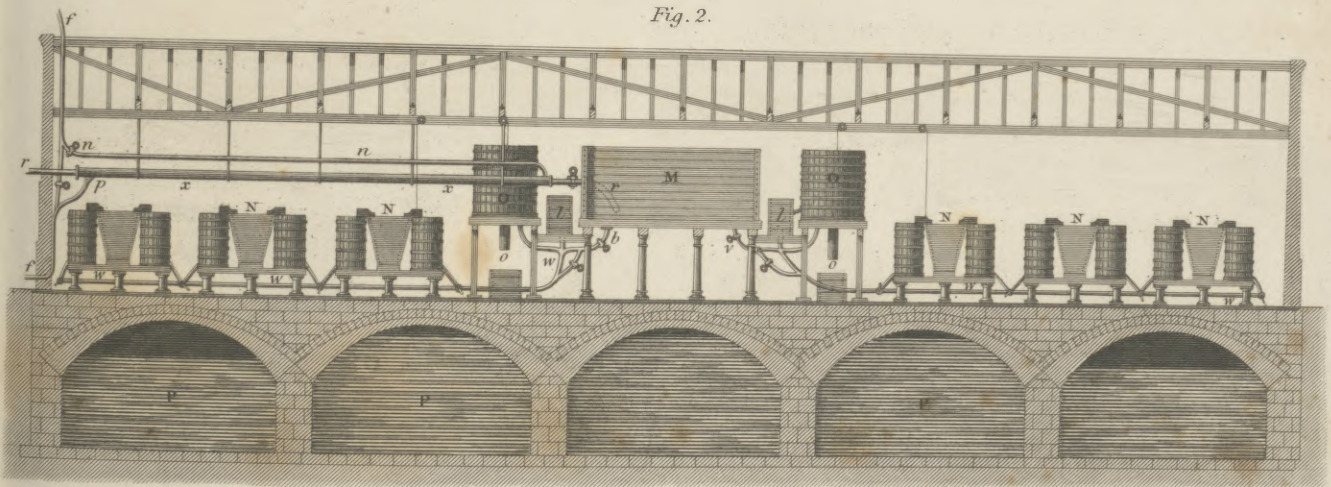
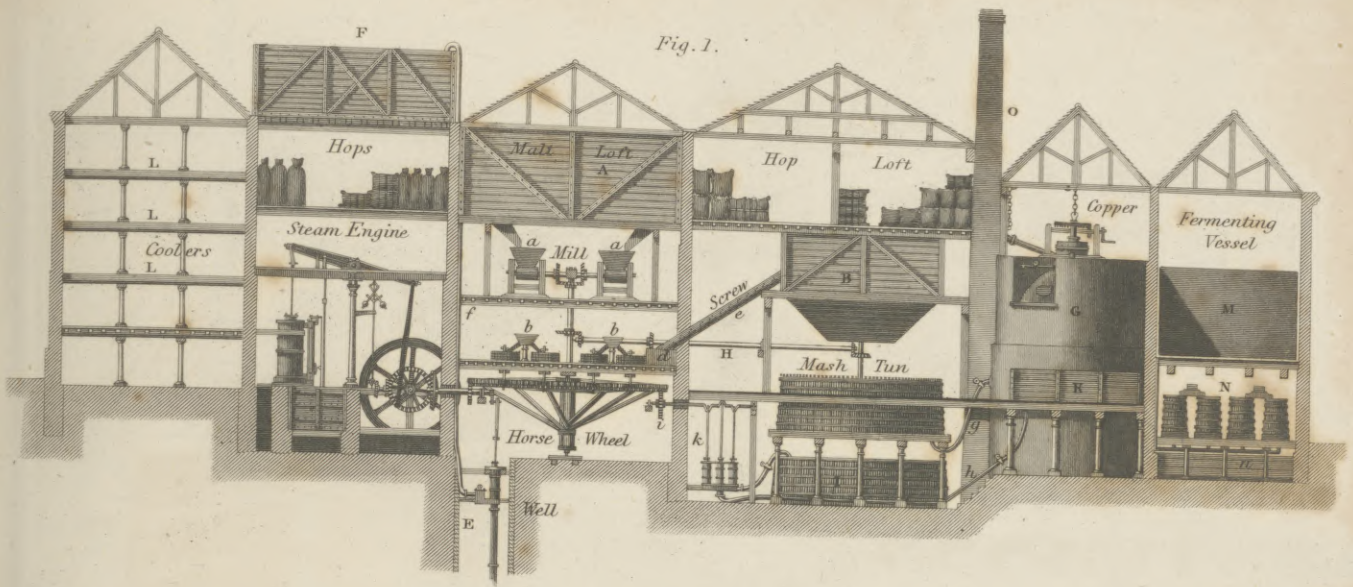


TRANSVERSE SECTION of the FINISHED PART of the BREAKWATER.



Eng^d by G. Aikman, Edin.





BREWING.

PLATE CXXXI.

Mashing Engine.

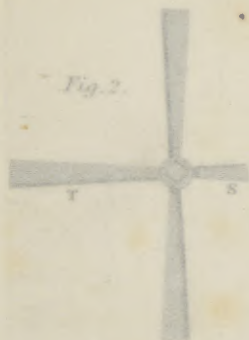


Fig. 2.

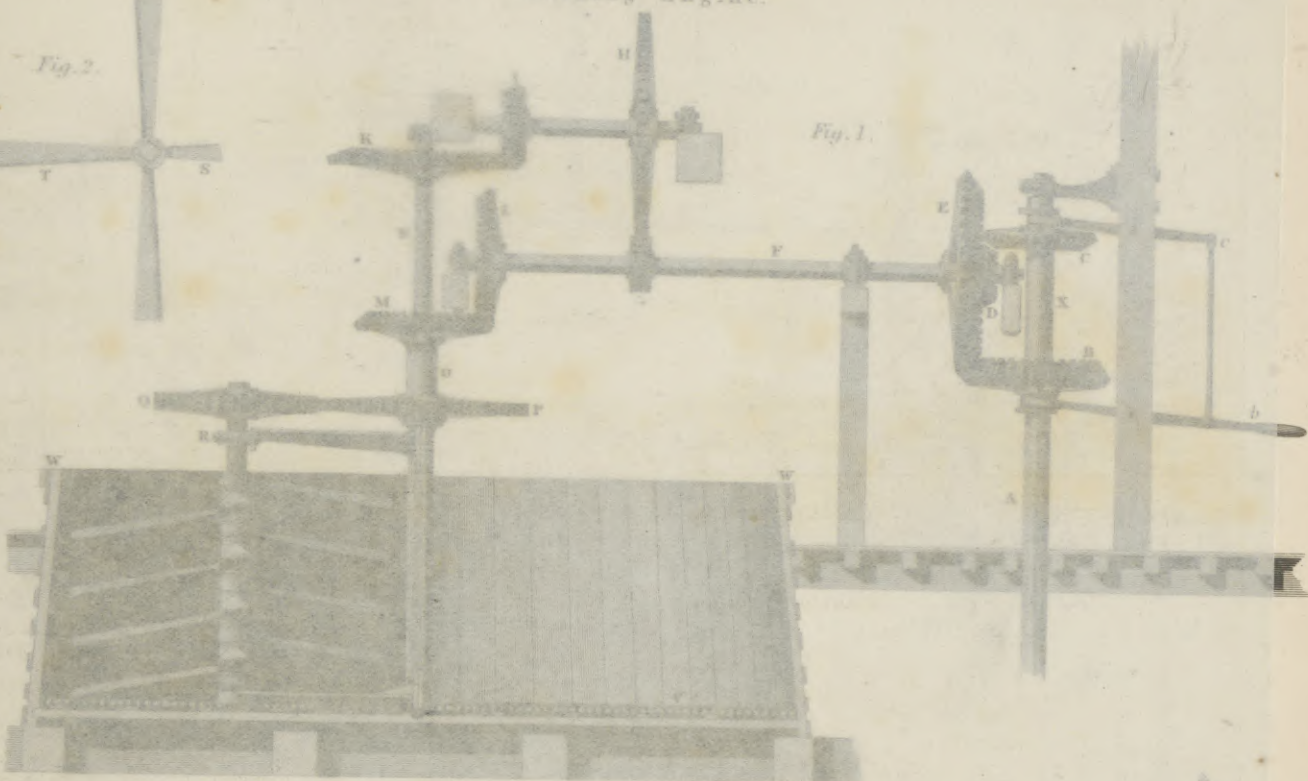


Fig. 1.

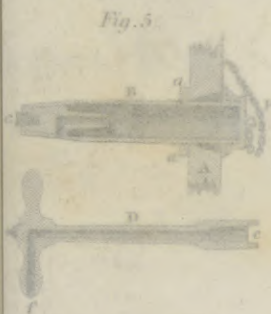


Fig. 5.

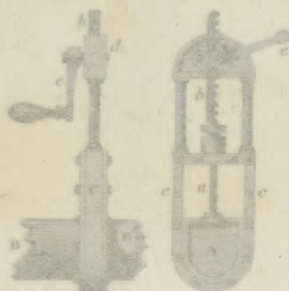


Fig. 6.



Fig. 7.



Fig. 3.

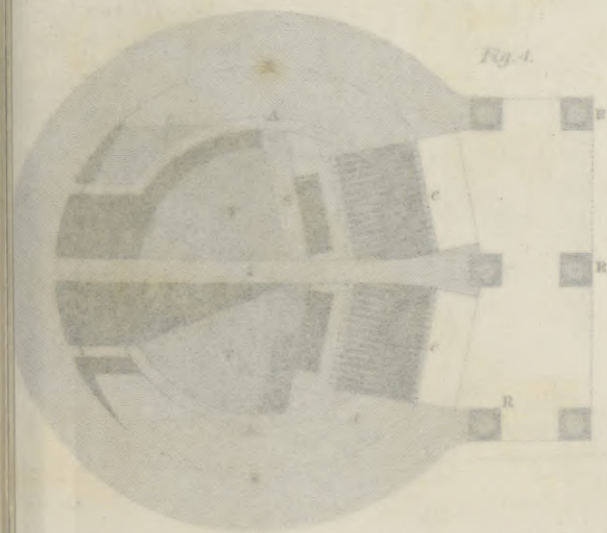


Fig. 4.

BREWING.

Mashing Engine.

PLATE CXXXI

Fig. 2.

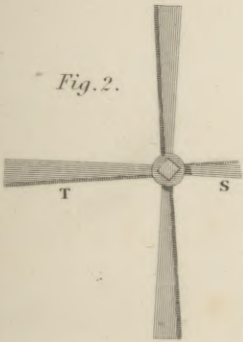


Fig. 1.

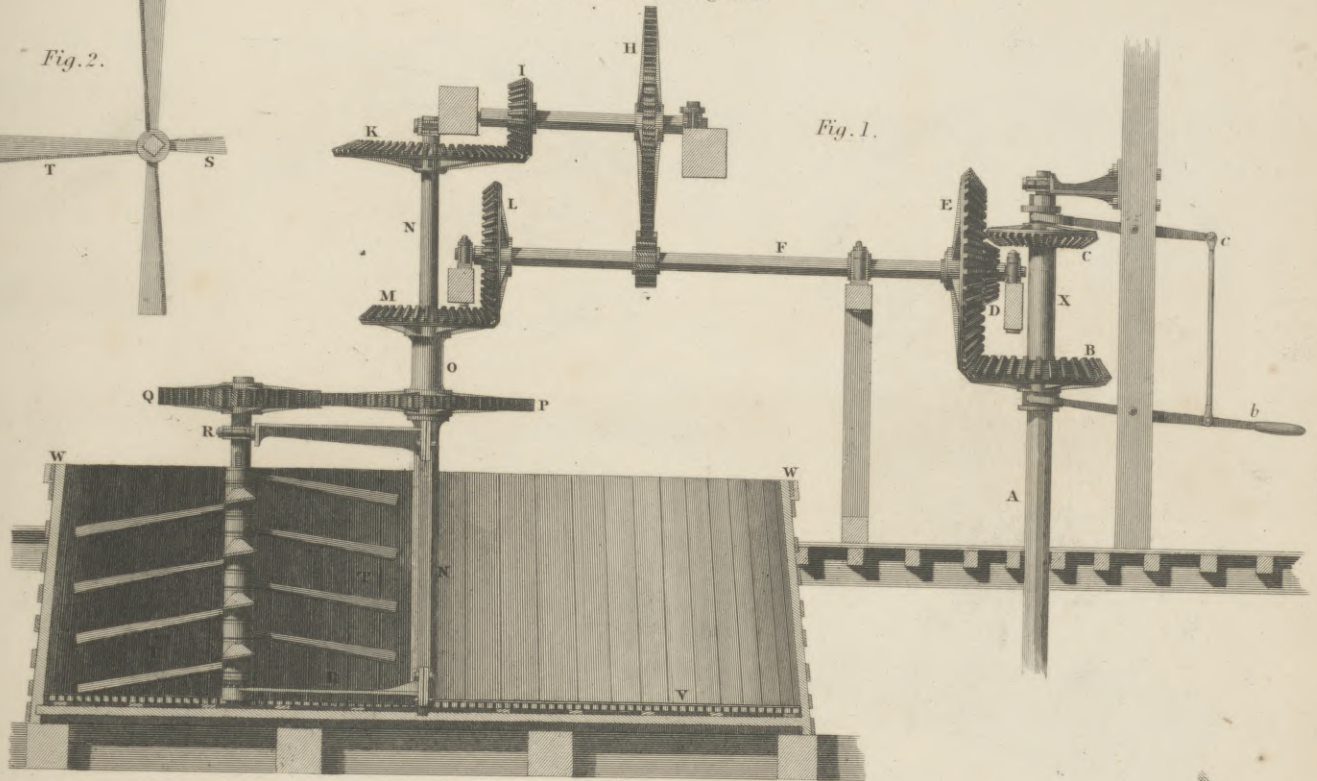


Fig. 5.

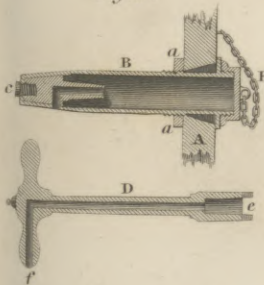


Fig. 6.

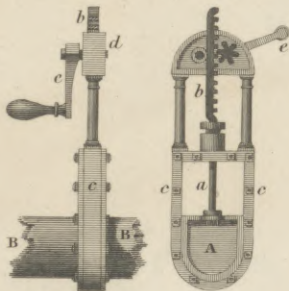


Fig. 7.

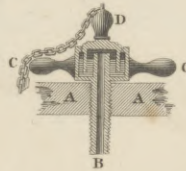


Fig. 3.

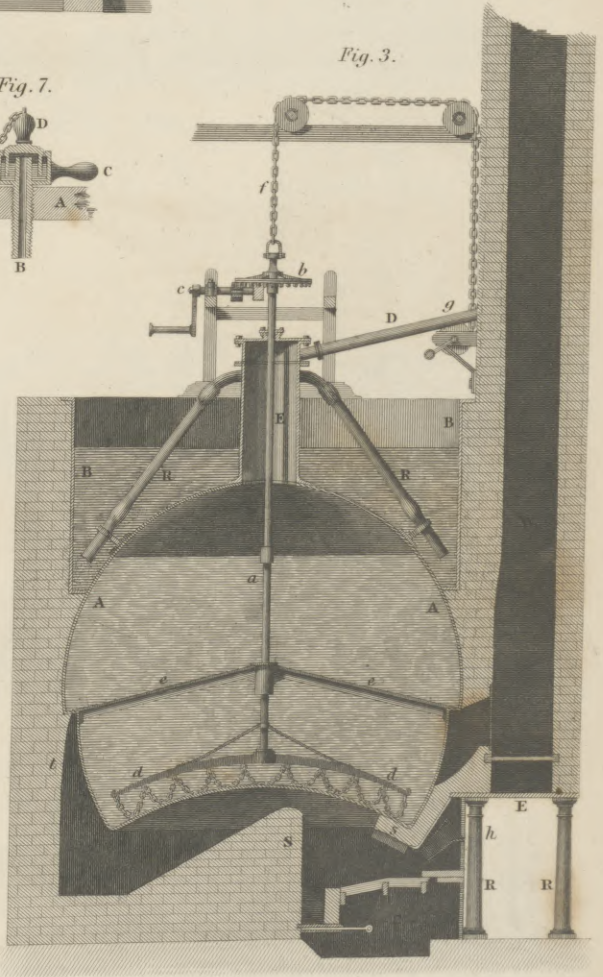


Fig. 4.

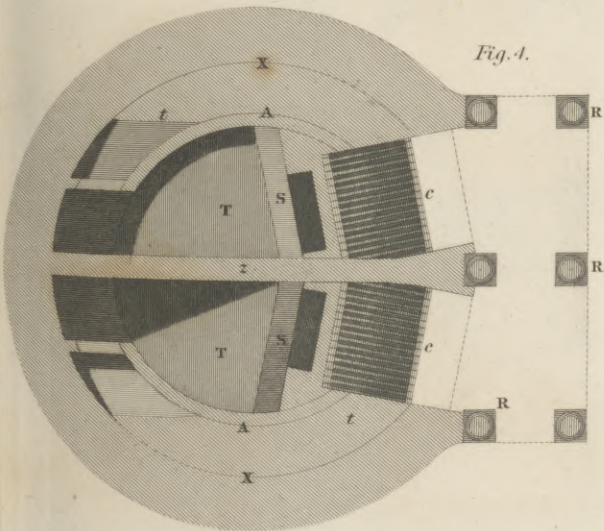


Fig. 1.



Fig. 2.



Fig. 3.



Fig. 4.



Fig. 5.

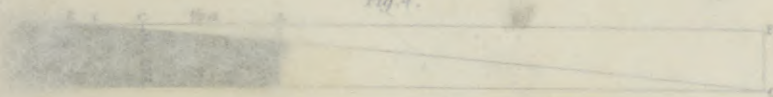


Fig. 6.



Fig. 7.

BRIDGE PROPOSED BY MESSRS TELFER & BOUGLASS.

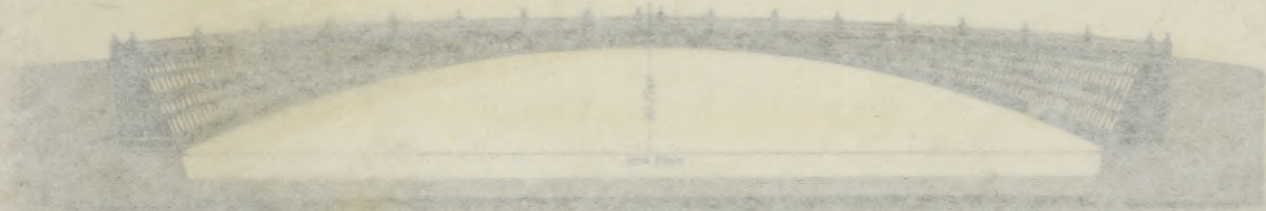


Fig. 8.

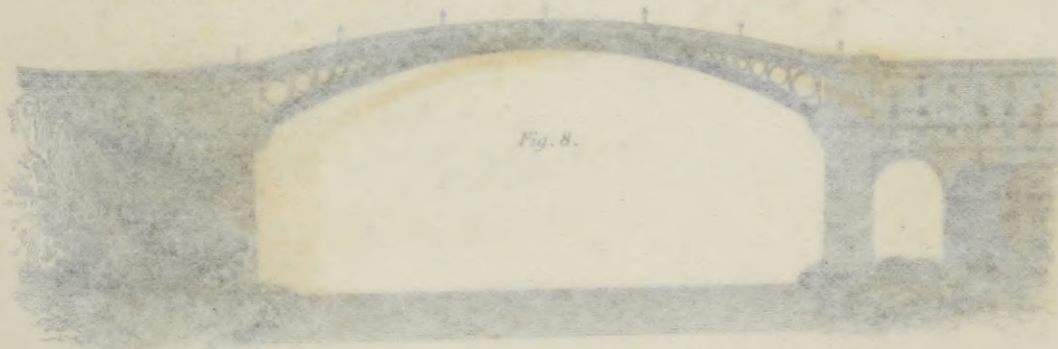


Fig. 9.

WATERBURY HALL.

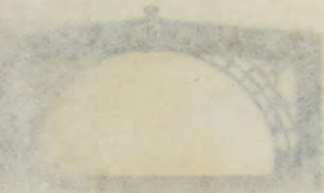


Fig. 10.

BRISTOL.



Fig. 11.

WILLOWDALE.

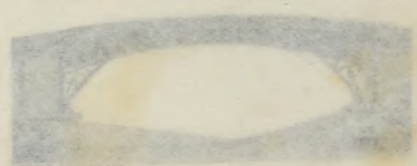


Fig. 12.

DUNDEE.



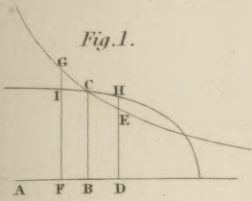


Fig. 2.

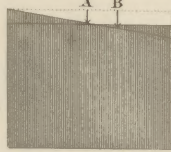


Fig. 3.

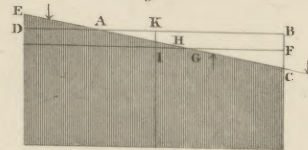


Fig. 5.

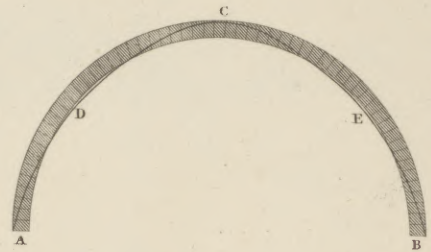


Fig. 4.

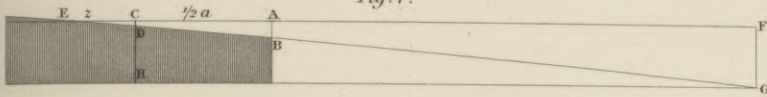


Fig. 6.

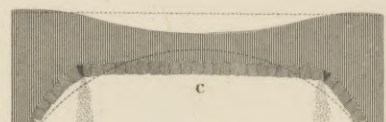
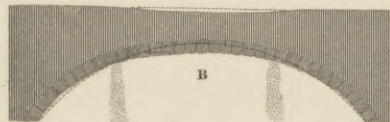
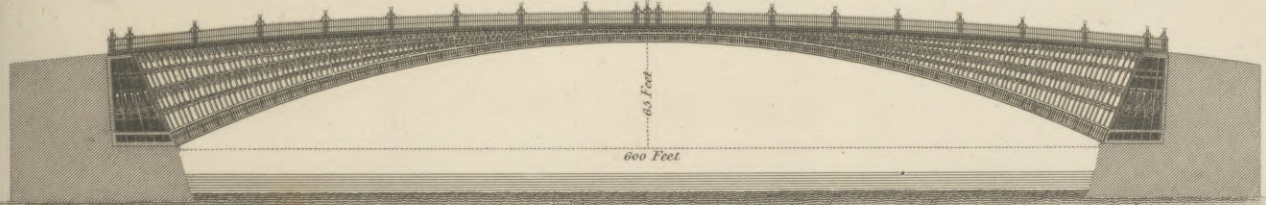


Fig. 7.

BRIDGE PROPOSED BY MESS^{RS} TELFORD & DOUGLASS.



WEARMOUTH.

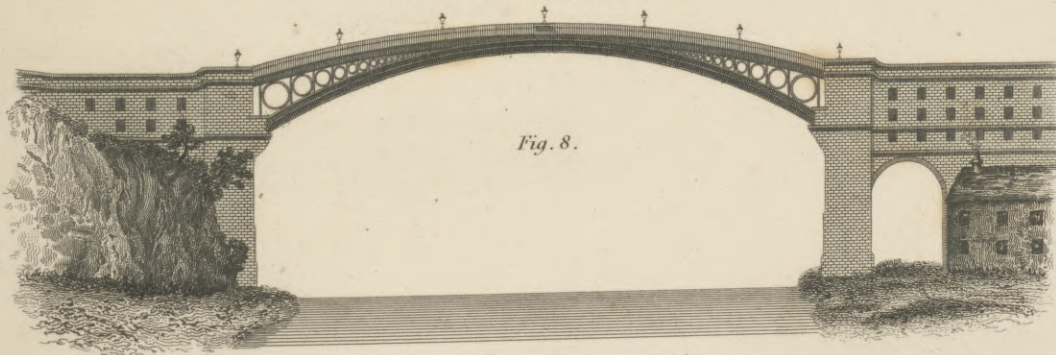


Fig. 8.

Fig. 9.

COLEBROOK DALE.



Fig. 10.

BRISTOL.



Fig. 11.

BUILDWAS.

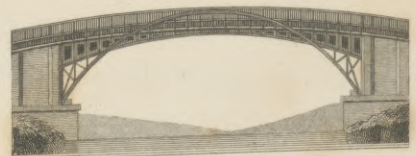


Fig. 12.

DUNKELD.



Fig. 1.

SECTION OF THE LOUVRE.



Fig. 2.



Fig. 3.

FAUXHALL.



Fig. 4.

SOUTHWARK.



Fig. 5.

Plan.



Fig. 6.

LONDON OLD BRIDGE.



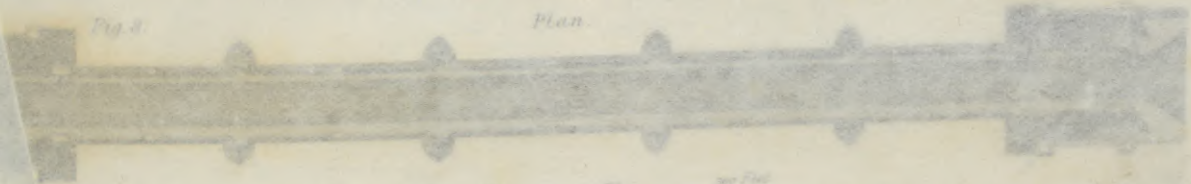
Fig. 7.

LONDON NEW BRIDGE.



Fig. 8.

Plan.



BRIDGE.

PLATE CXXXIII.

Fig. 1.

BRIDGE OF THE LOUVRE.

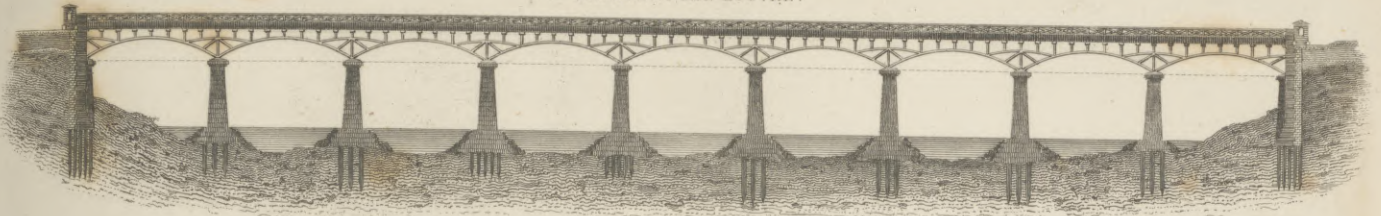


Fig. 2.

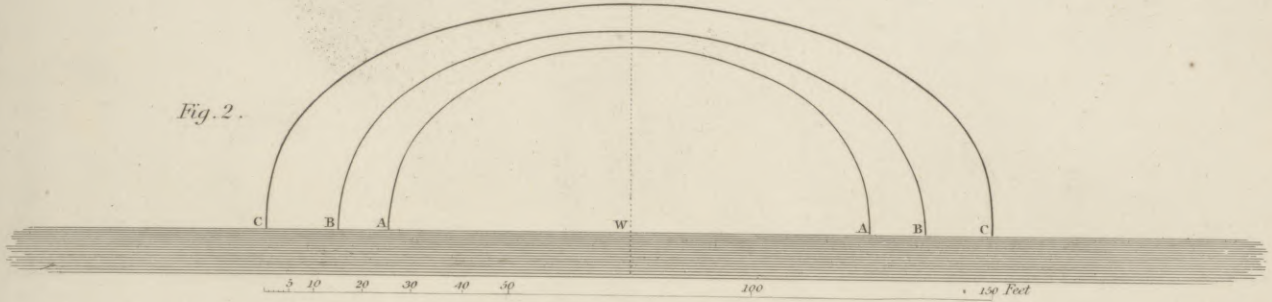


Fig. 3.

VAUXHALL.

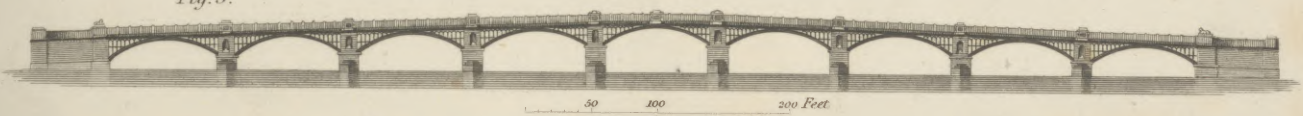


Fig. 4.

SOUTHWARK.

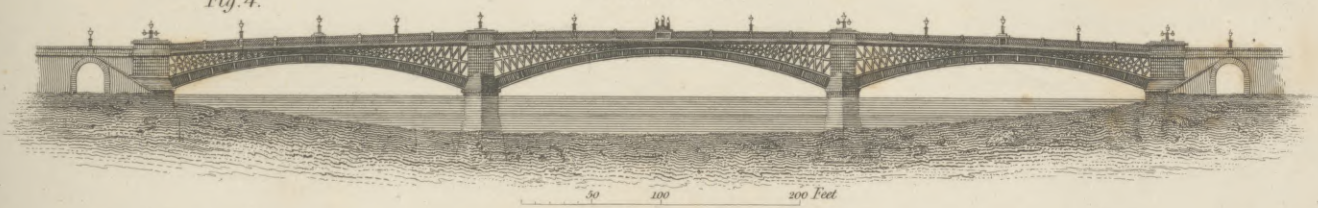


Fig. 5.

Plan.

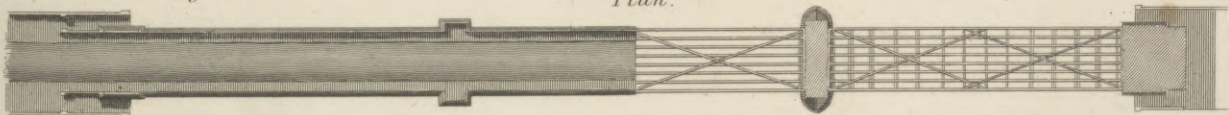


Fig. 6.

LONDON OLD BRIDGE.



Fig. 7.

LONDON NEW BRIDGE.

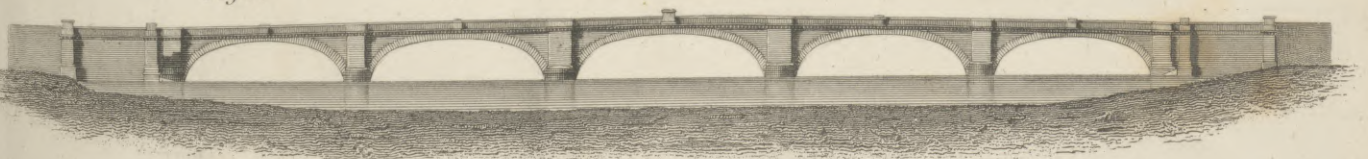


Fig. 8.

Plan.

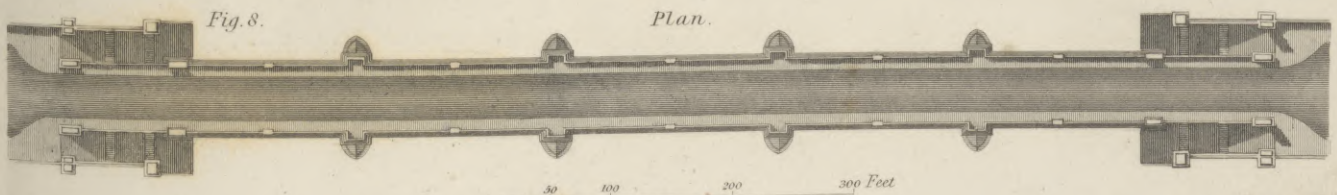


Fig. 1.



Fig. 2.



Fig. 3.

SECTION OF BRIDGE WITH THE TOWER



Fig. 1.

WATERLOO BRIDGE.

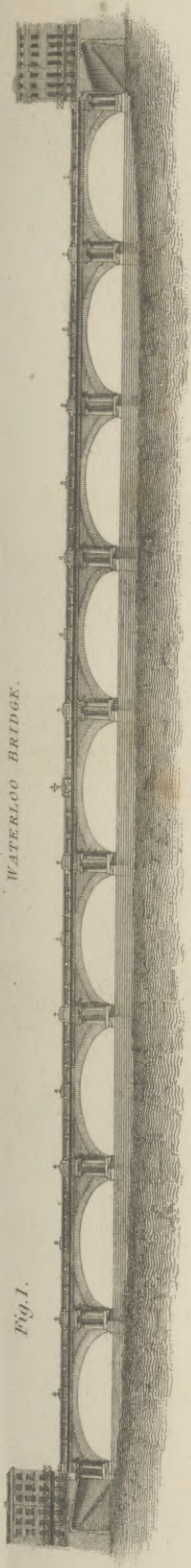
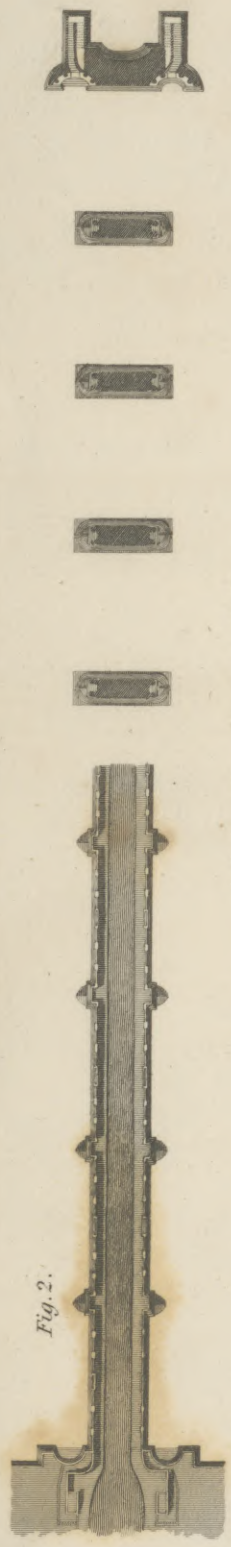


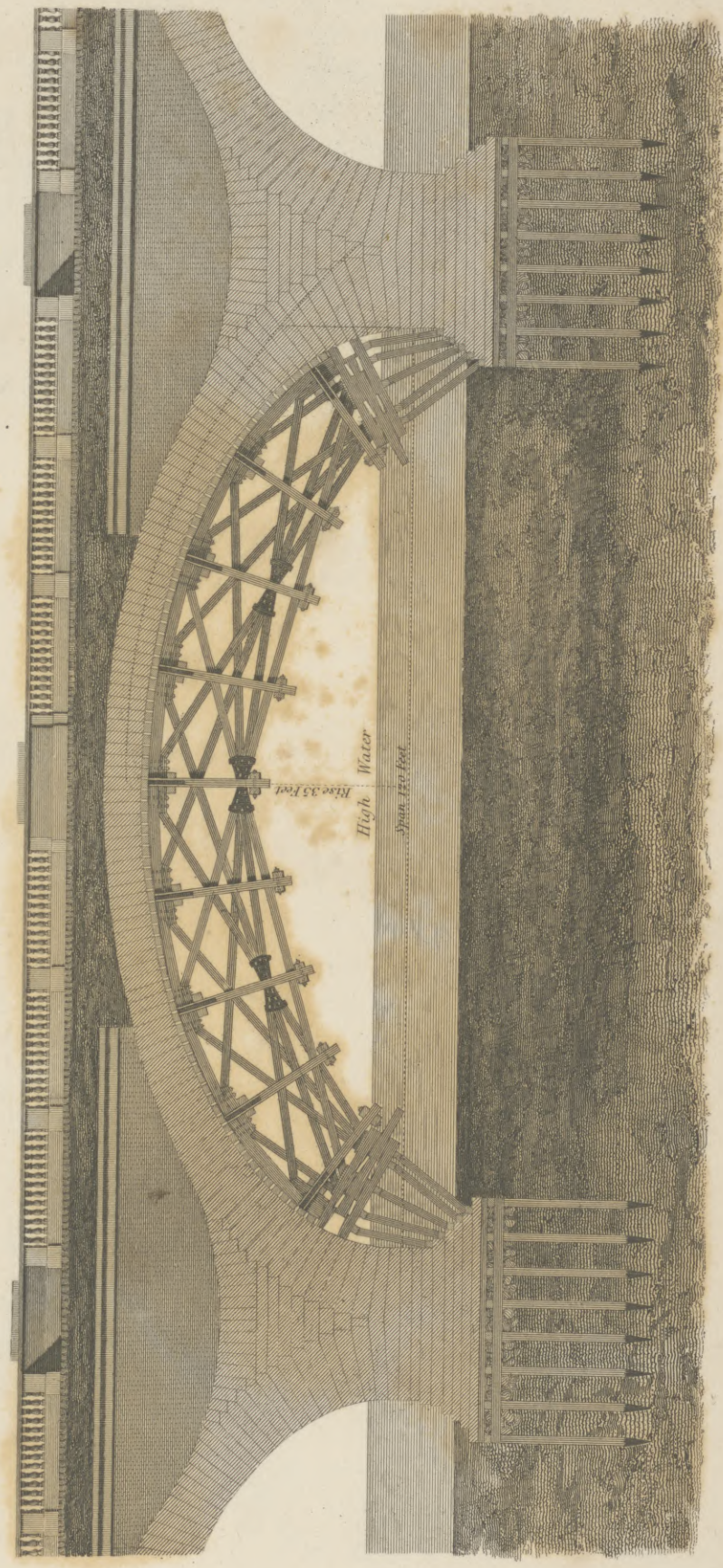
Fig. 2.



0 25 50 100 150 200 250 Feet

SECTION OF AN ARCH, WITH THE CENTRE.

Fig. 3.

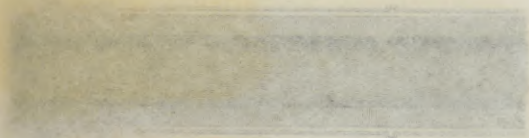


0 5 10 20 30 40 50 60 Feet

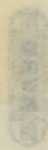
BRIDGE.

PLATE CXXIV.

ELEVATION OF THE DEAD BRIDGE, FROM THE EAST.



ELEVATION AND CENTERLINE



EDGWAYS SECTION

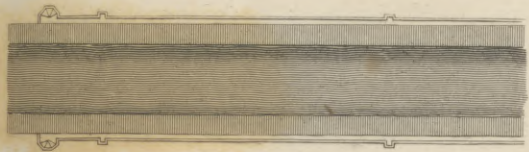


TRANSVERSE SECTION

BRIDGE.

PLATE CXXIV.

ELEVATION OF THE DEAN BRIDGE, EDINBURGH.

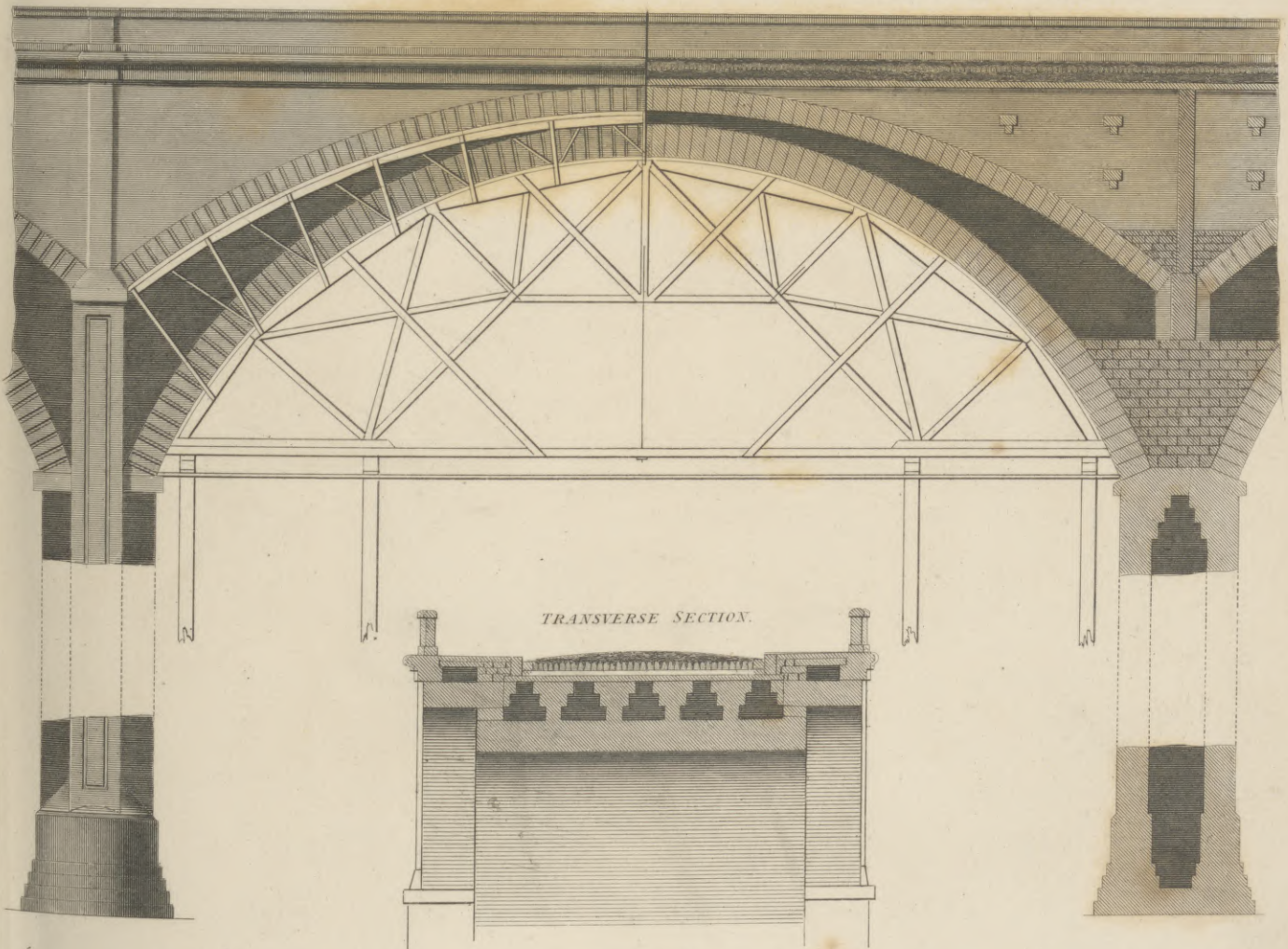


ELEVATION AND CENTERING



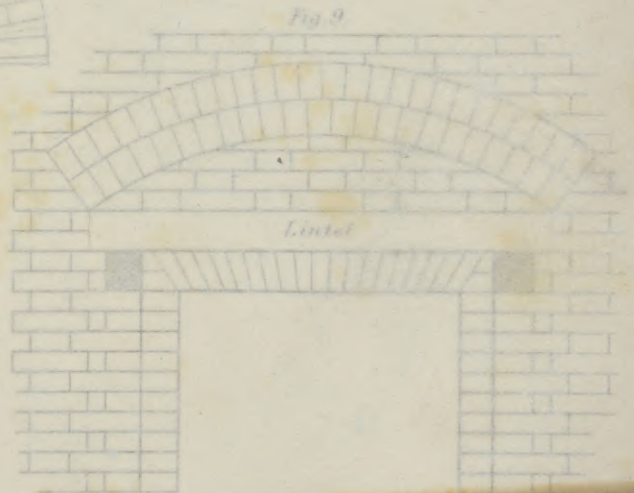
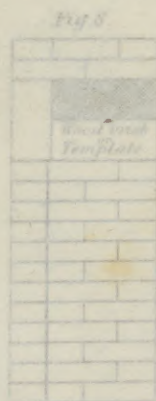
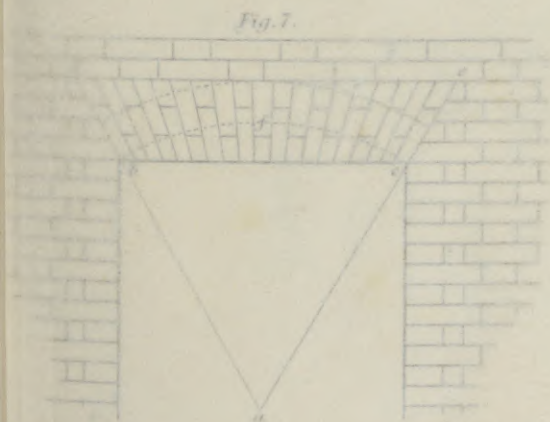
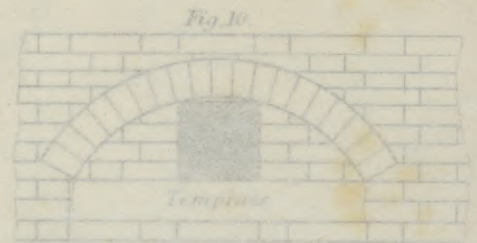
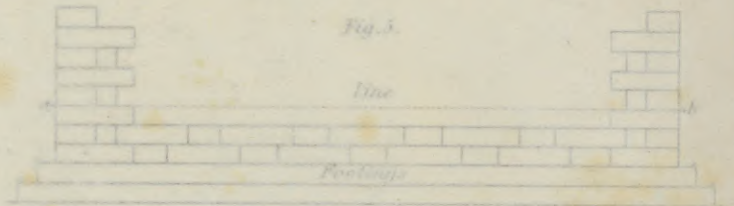
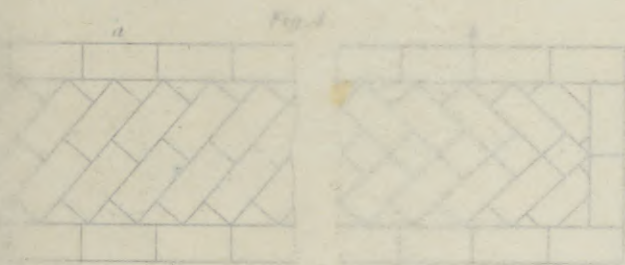
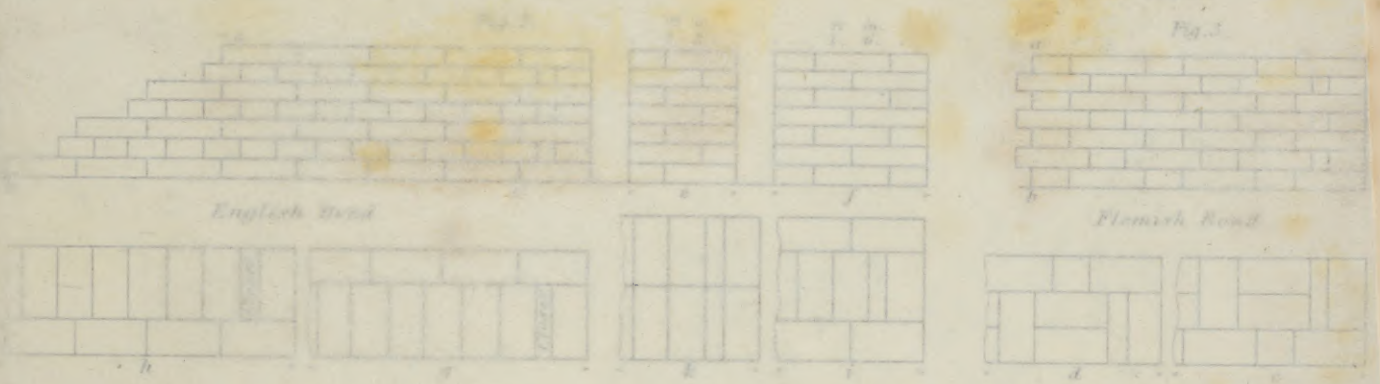
10 20 30 40 50 100 200 300 Feet

LONGITUDINAL SECTION.



TRANSVERSE SECTION.

5 10 20 30 40 50 60 Feet.



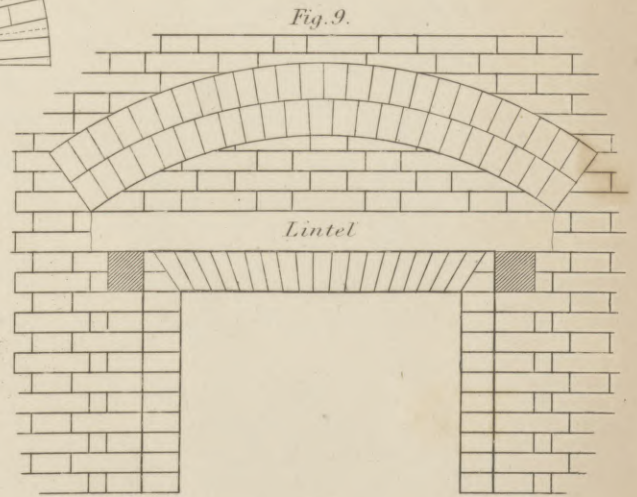
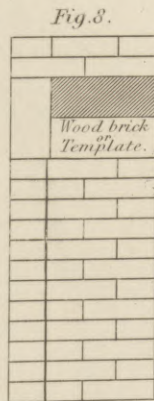
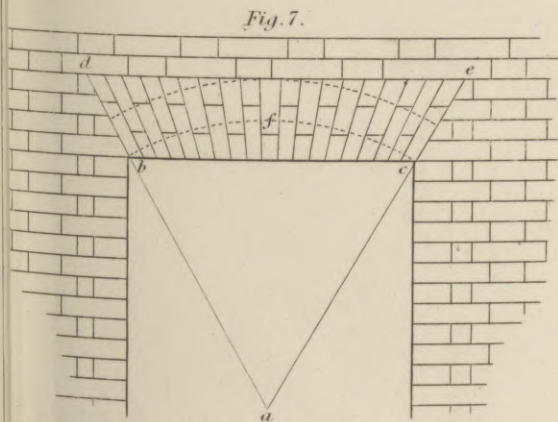
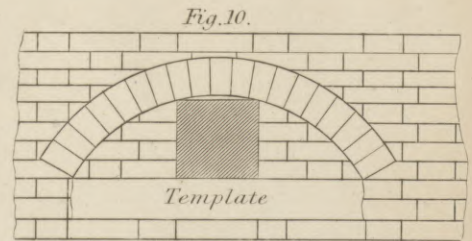
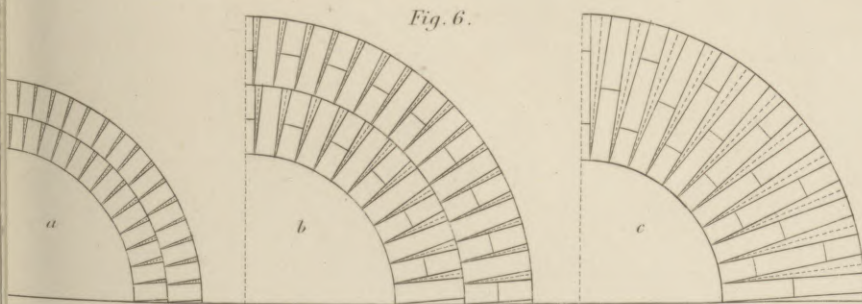
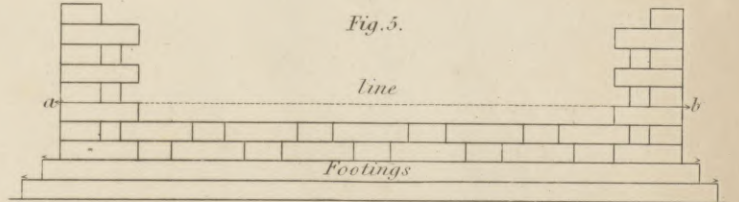
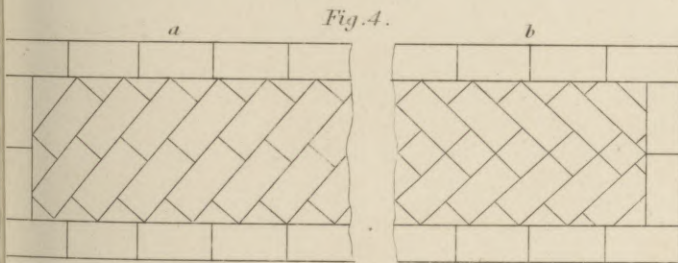
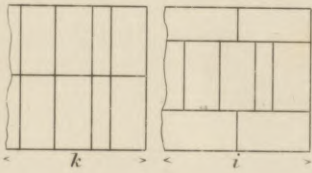
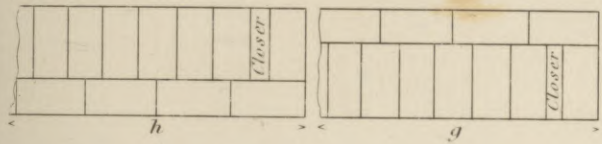
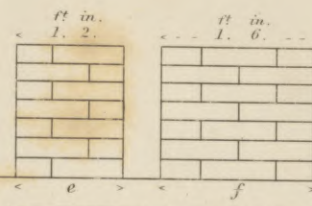
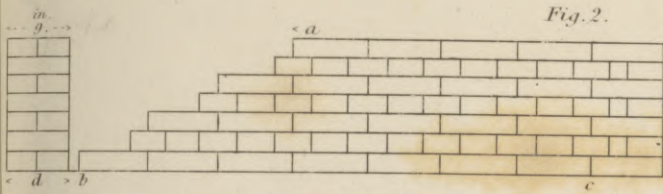
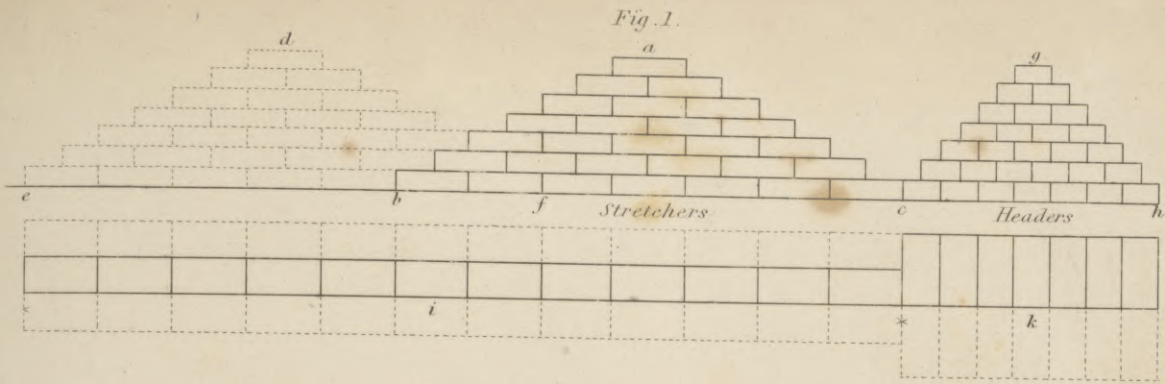


Fig. 14



Fig. 11

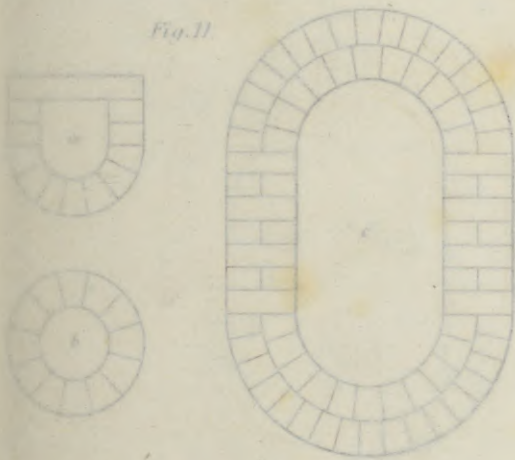


Fig. 12



Fig. 13

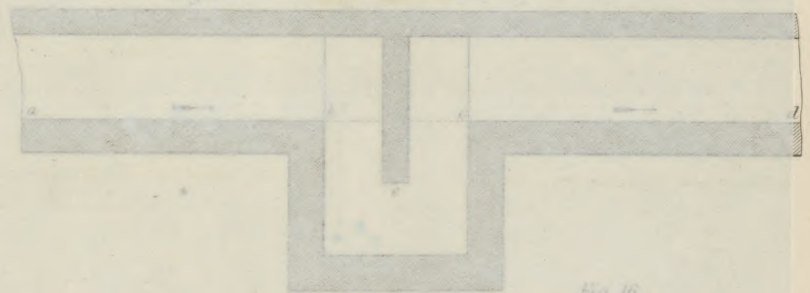


Fig. 15



Fig. 16

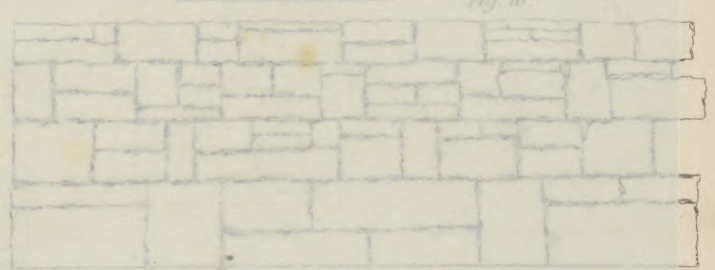


Fig. 17

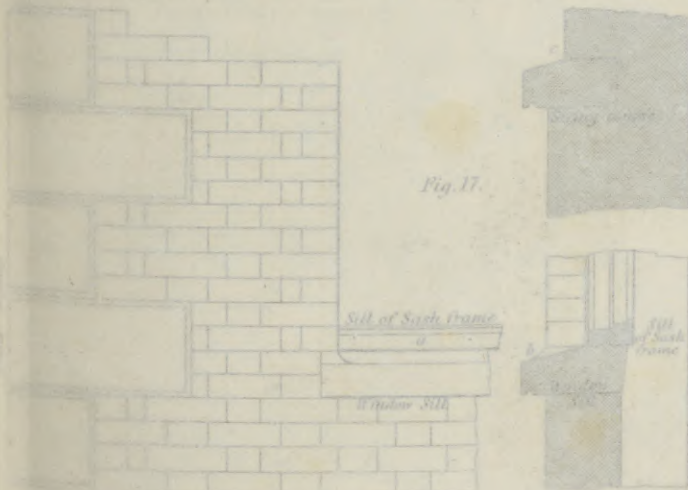


Fig. 19



Fig. 18

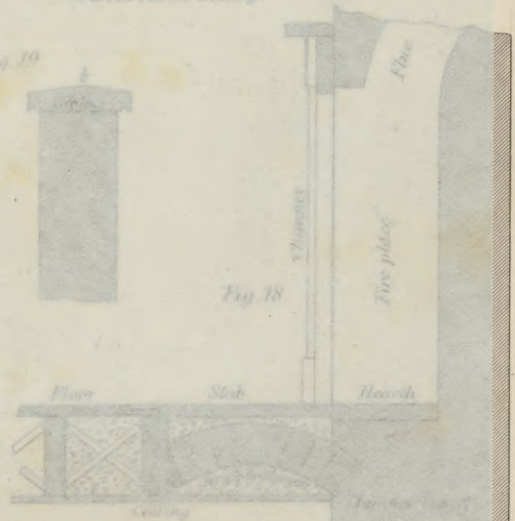


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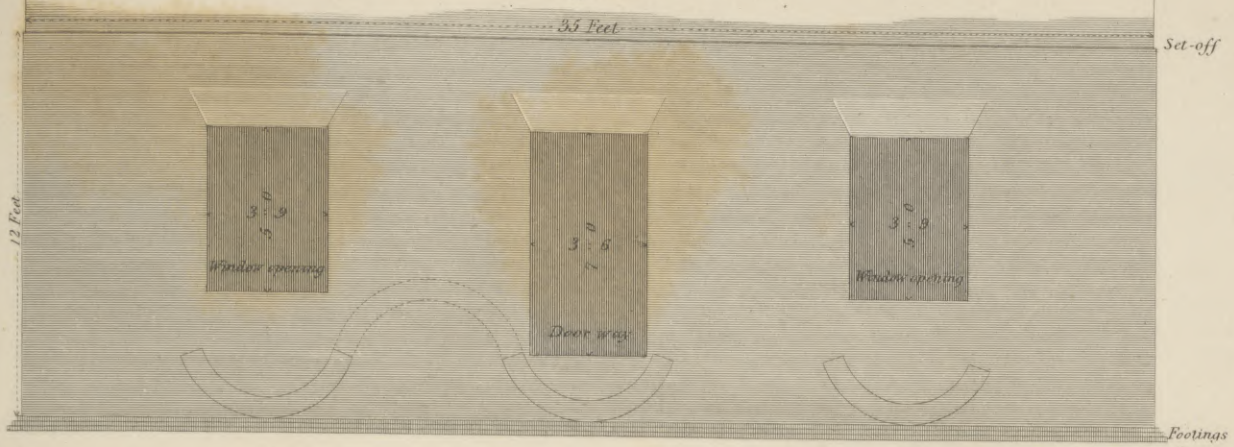


Fig. 11.

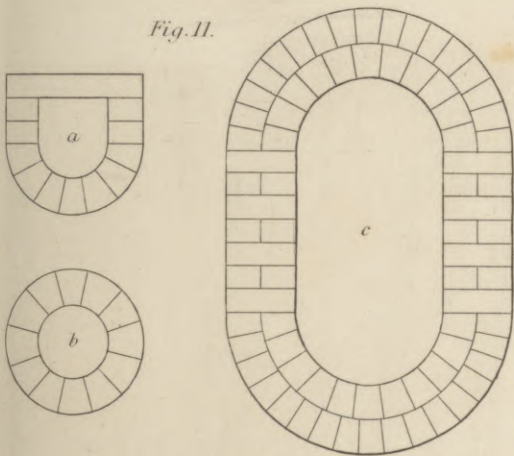


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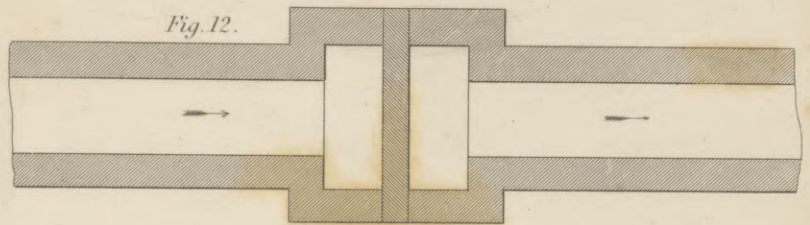


Fig. 13.

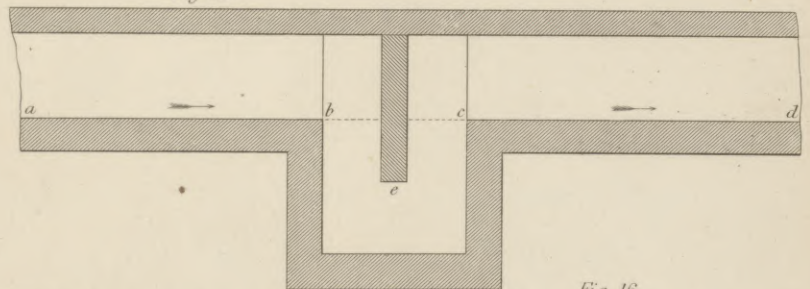
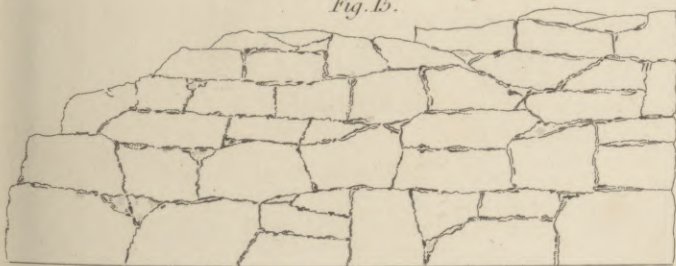


Fig. 15.



Uncoursed rubble walling.

Fig. 16.



Coursed rubble walling.

Fig. 17.

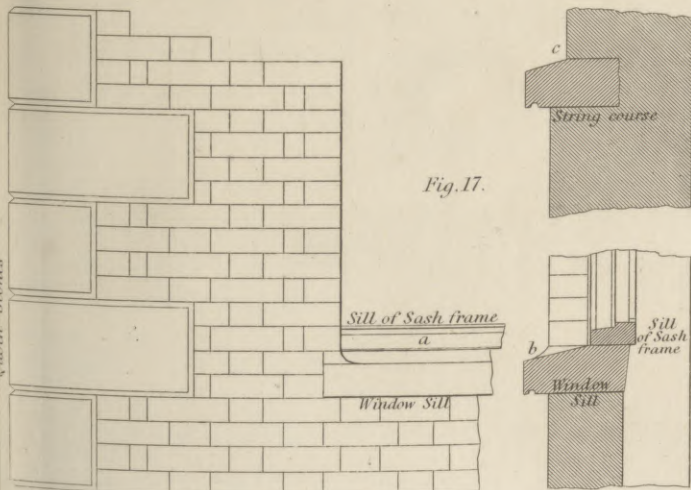


Fig. 19.

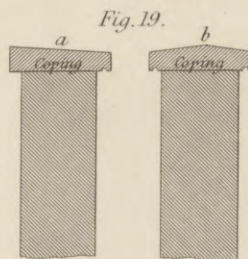


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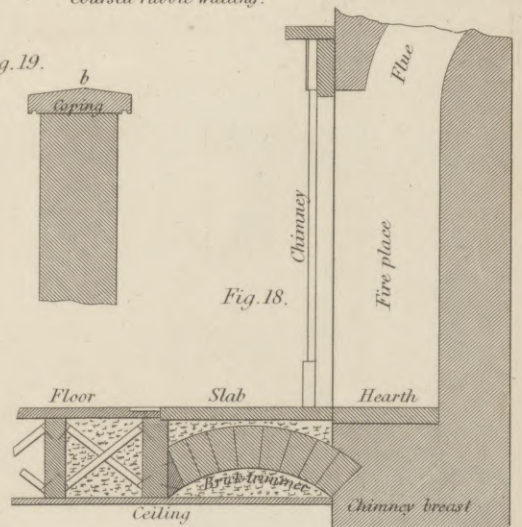


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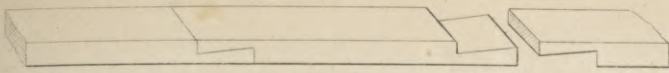


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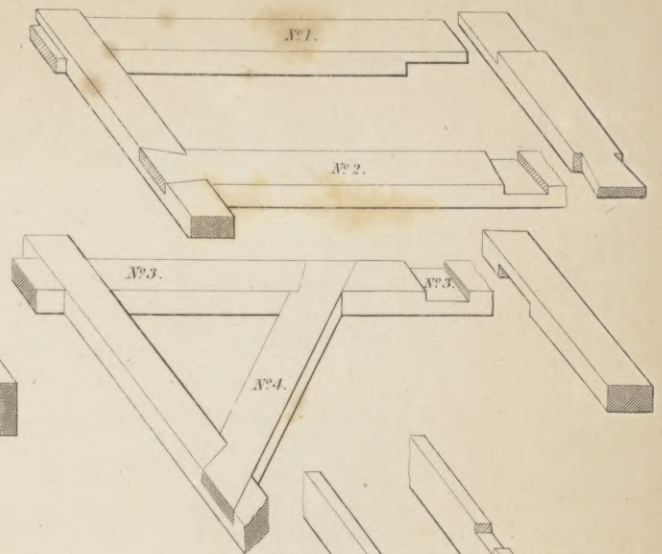


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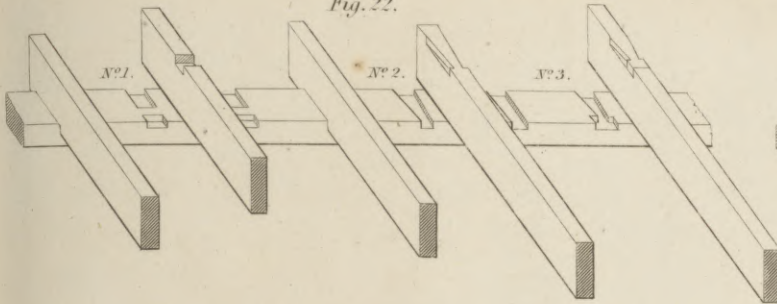


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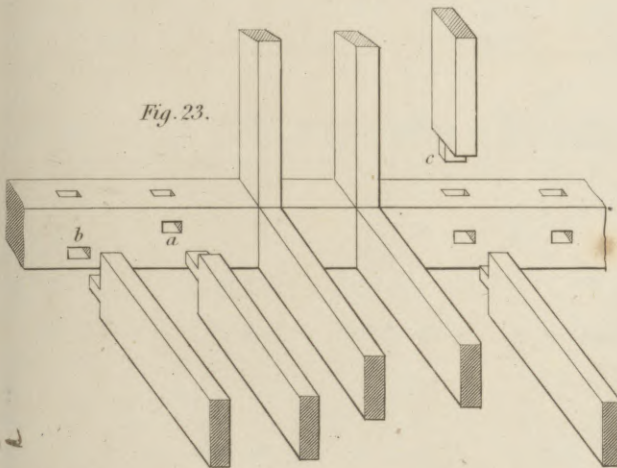


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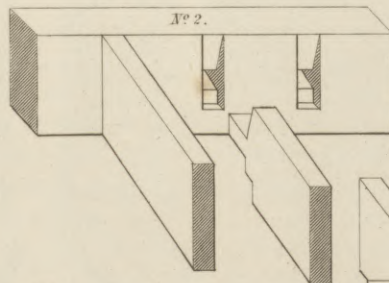
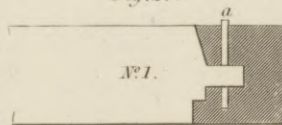


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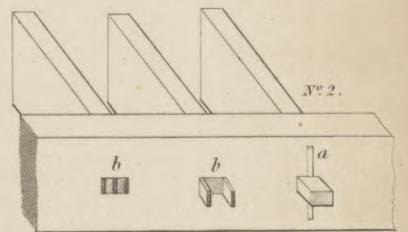
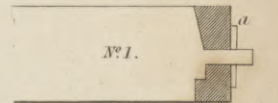
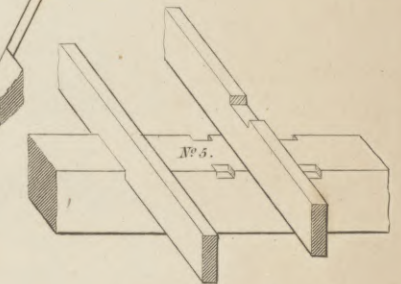


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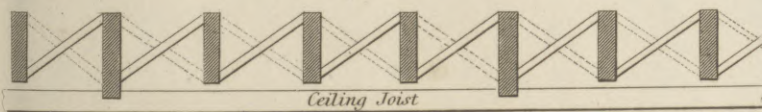
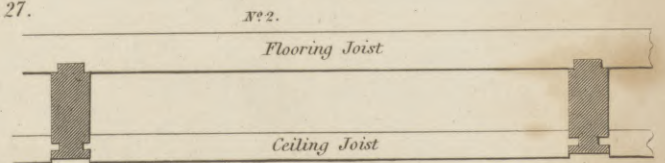


Fig. 27.



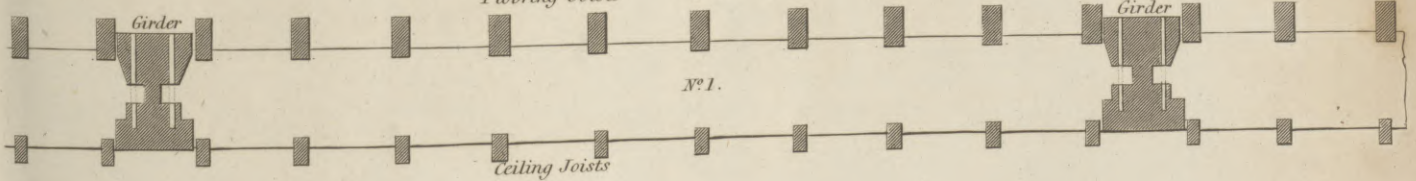
Flooring Joists N° 1.

Binder

Ceiling Joists

Flooring Joists

Fig. 28.



N° 1.

N° 2.

Girder

Binder

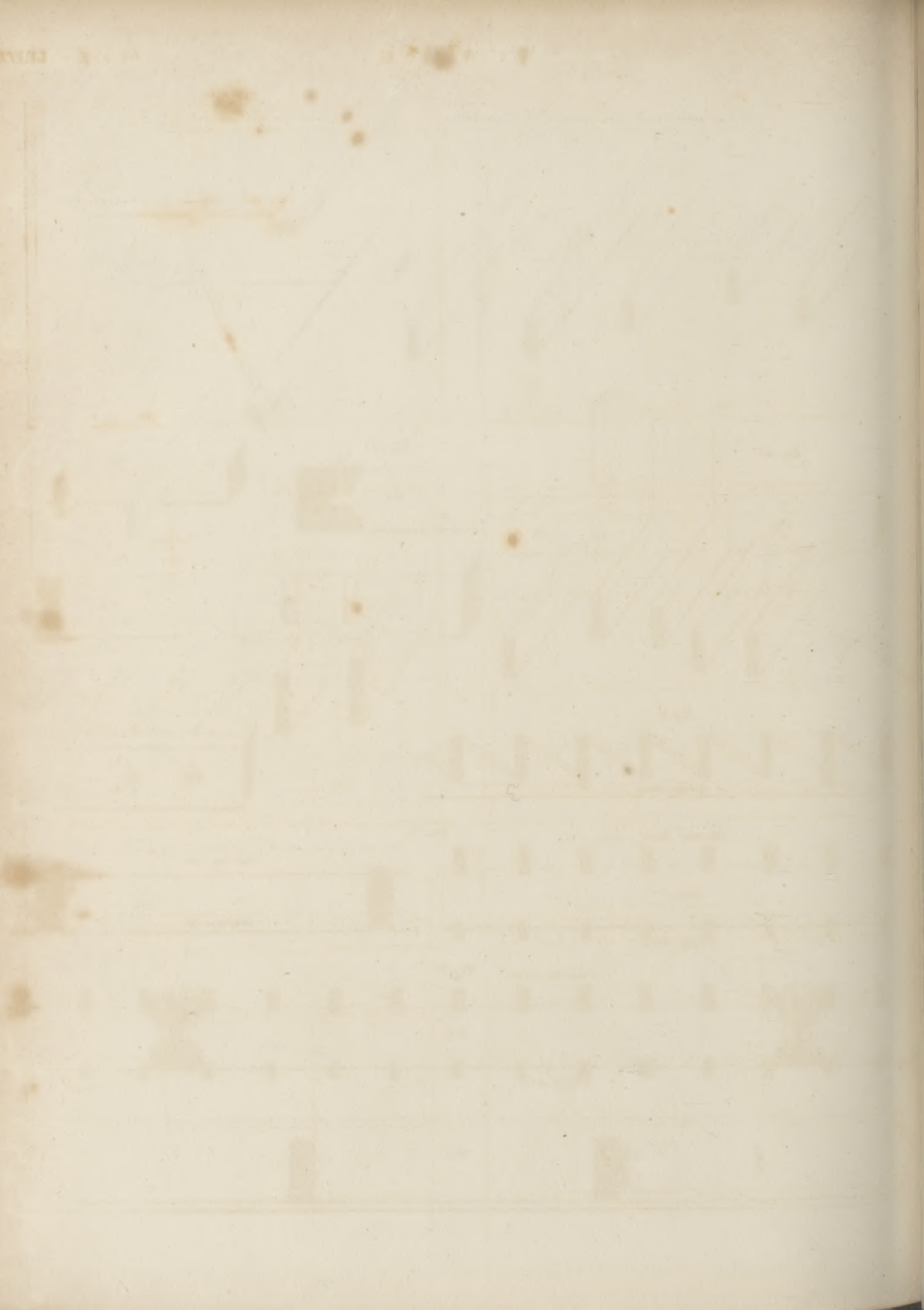


Fig. 28.

Fig. 29.

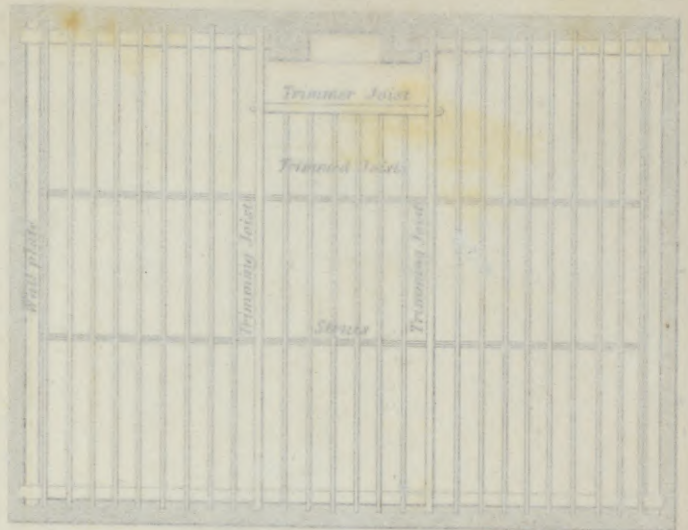
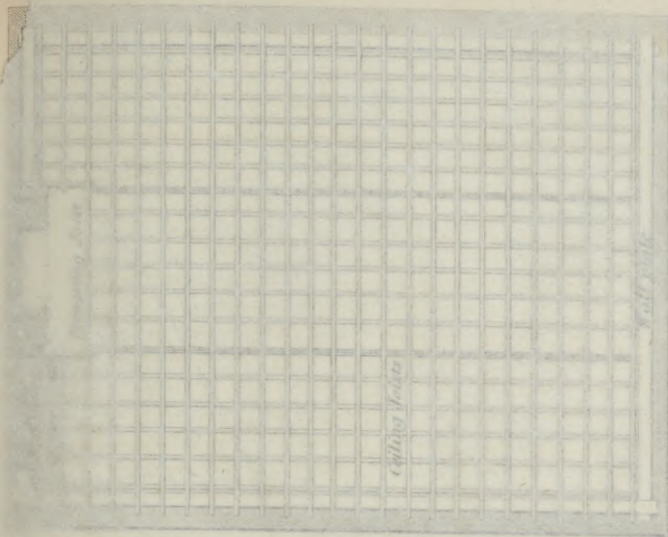


Fig. 30.

Fig. 31.

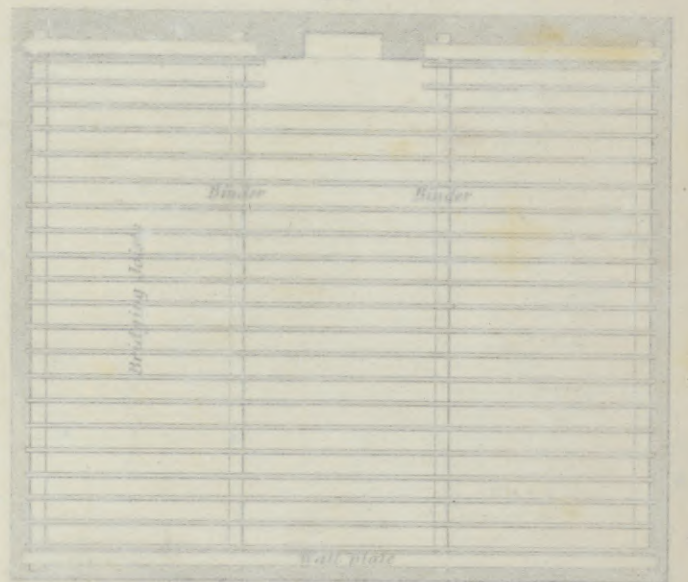
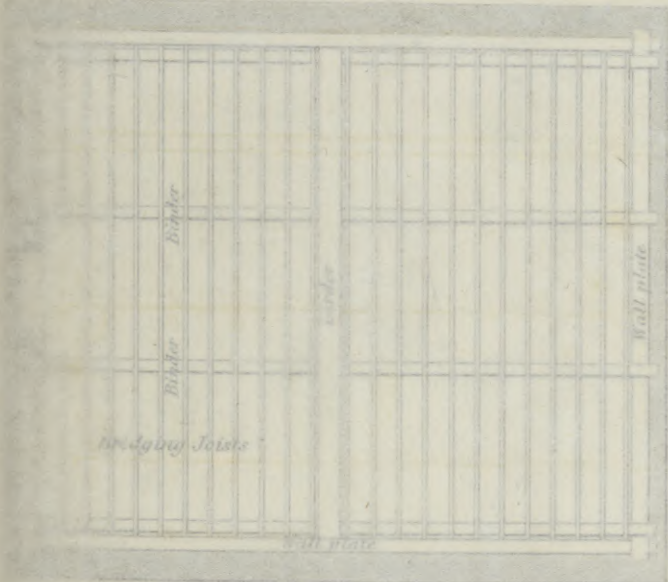
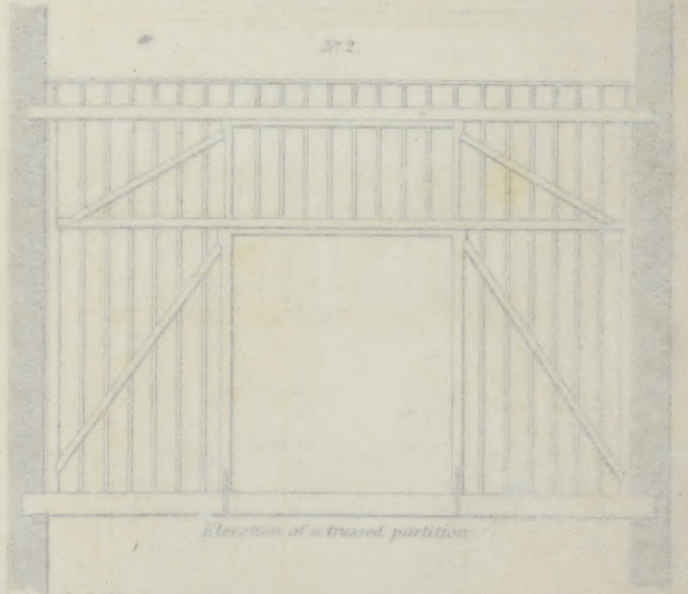


Fig. 32.

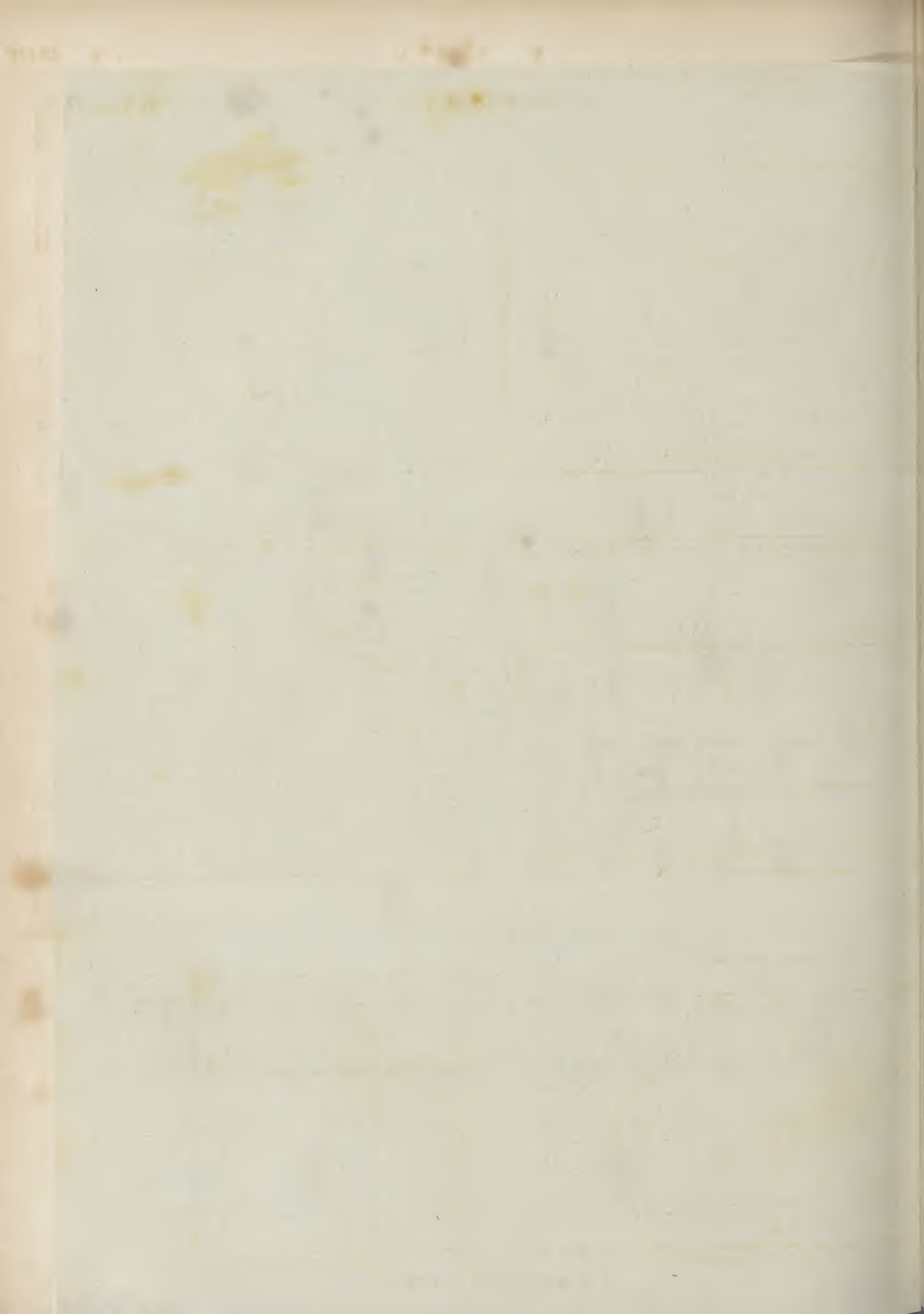
Section of a floor of single Joists on a partition.

Fig. 33.



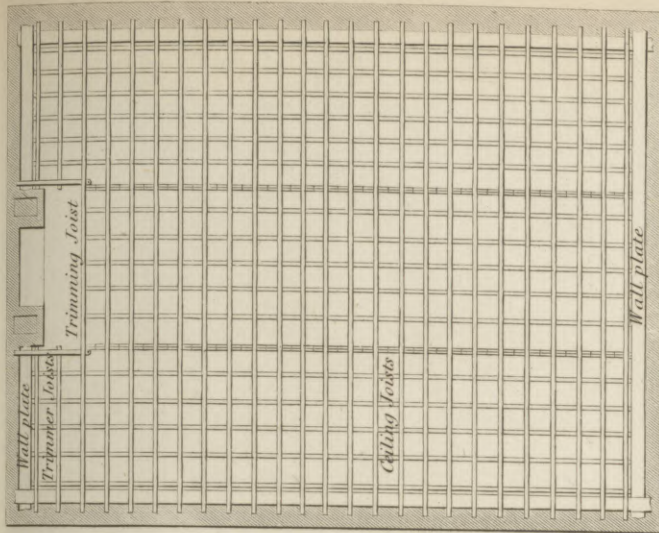
Elevation of a trussed partition.

Elevation of a trussed partition.

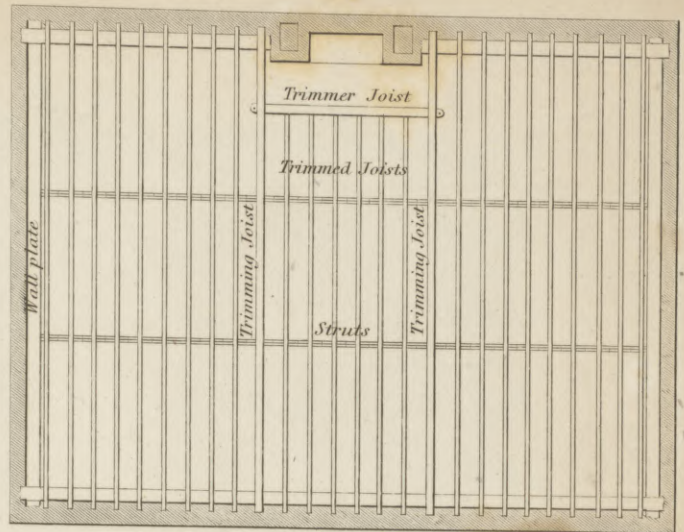


Nº 2.

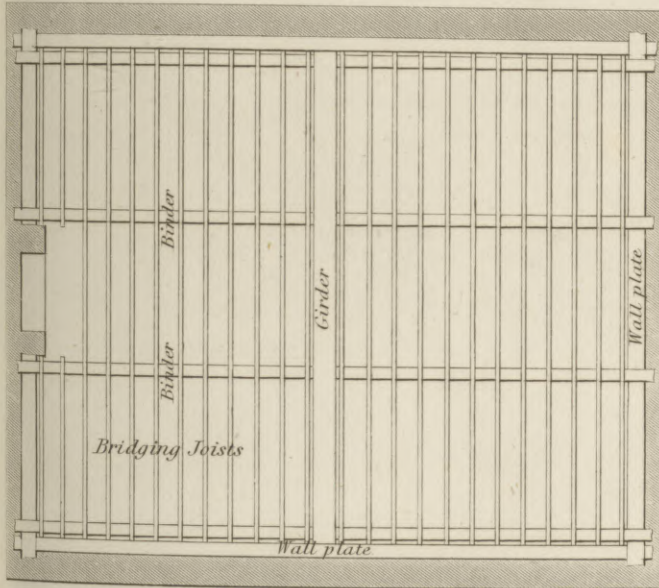
Fig. 29.



Nº 1.



Nº 4.



Nº 3.

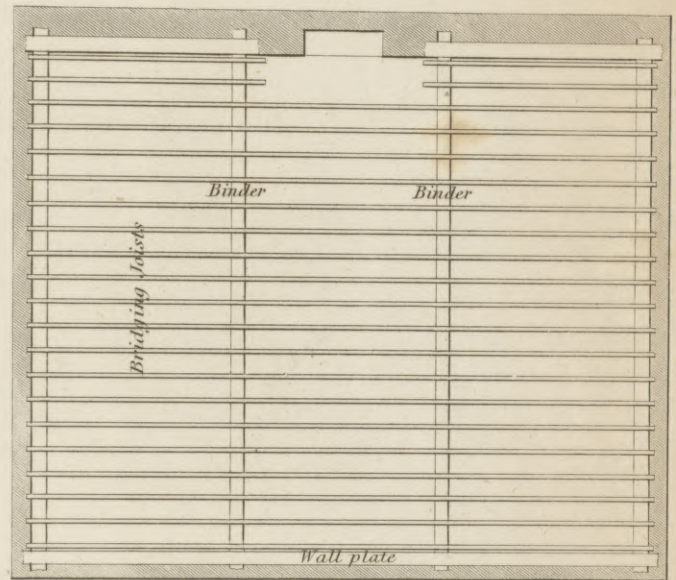
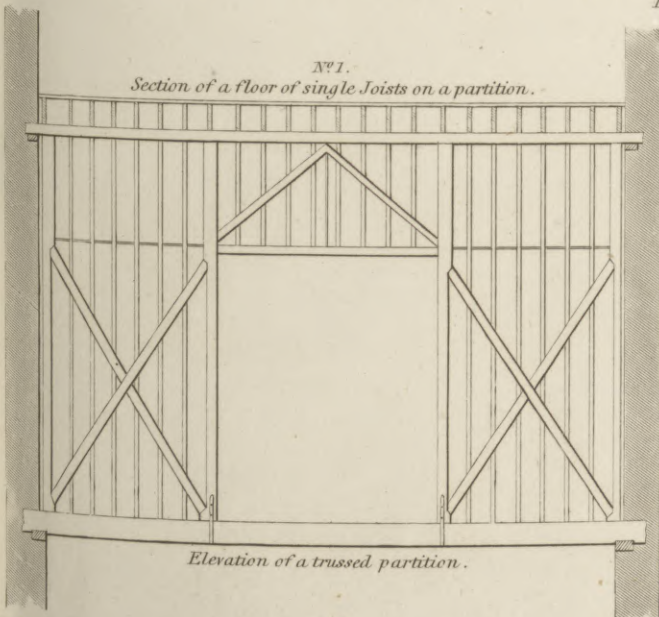


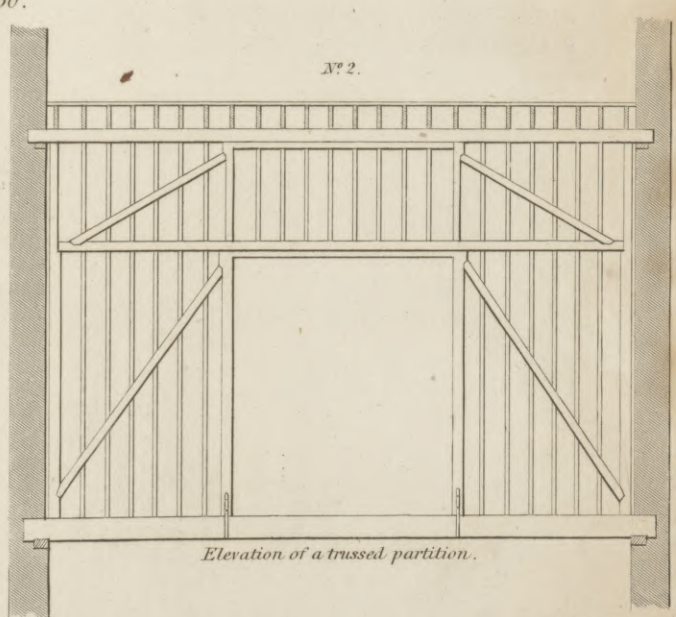
Fig. 30.

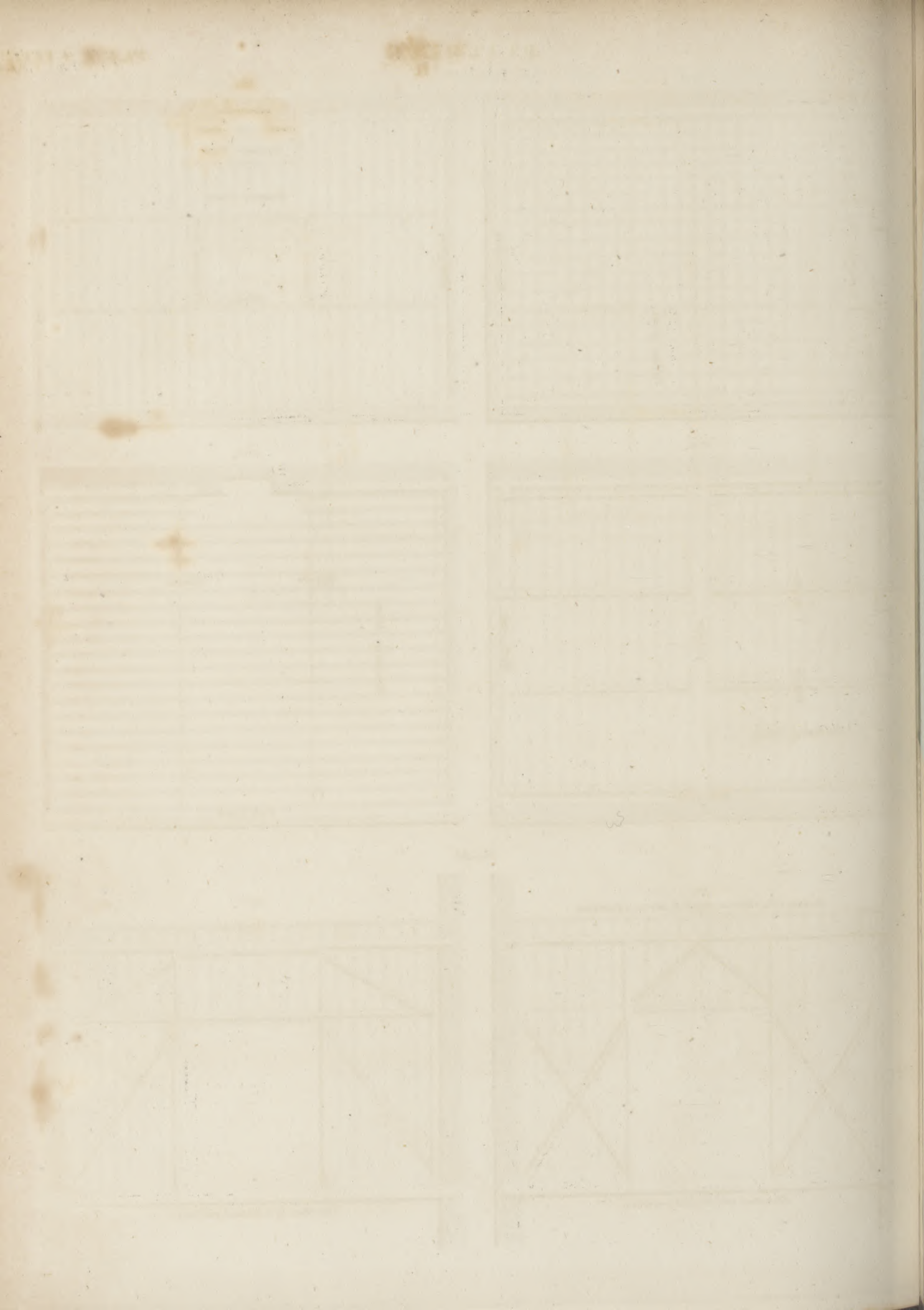
Nº 1.

Section of a floor of single Joists on a partition.



Nº 2.





Inside elevation of a window

Fig. 31.

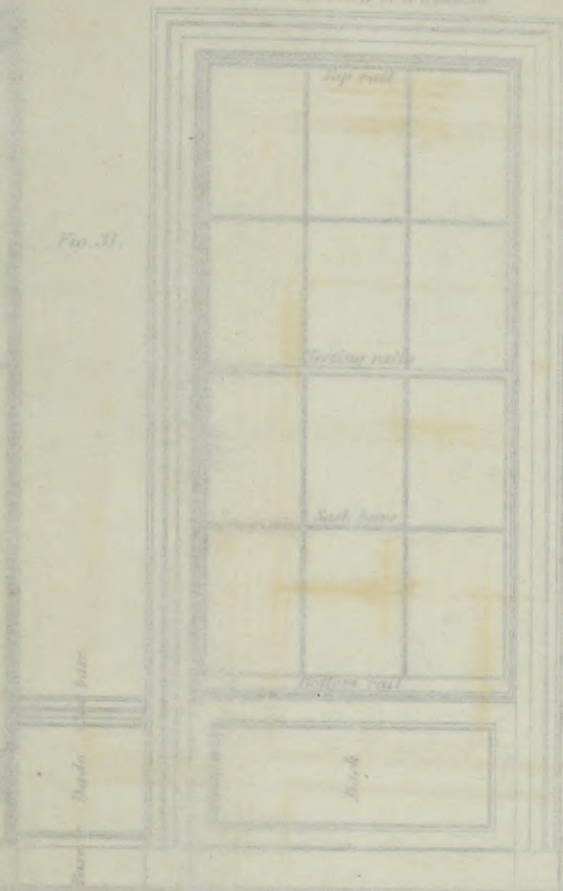


Fig. 32.

Elevation of a door



Stone sill

Wood sill

Plan of a window
(see Fig. 34)

Plan of a door way



Moulding

Raised panel

Stile

Plaster

Moulding

Flat panel moulded
mouldings stuck in the solid

Plaster

Fig. 33.

Plan of door, Fig. 32, to a larger scale

Flat panel square

Flat panel moulded,
mouldings laid in

Head butt

Moulding

Head finish

Frame of moulded panel having
mouldings stuck in the solid

Fig. 34.

Fig. 36.

Section of a leaded gutter

Gutter board

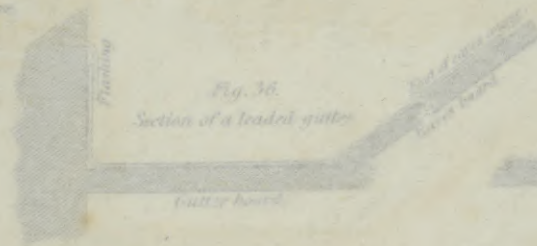
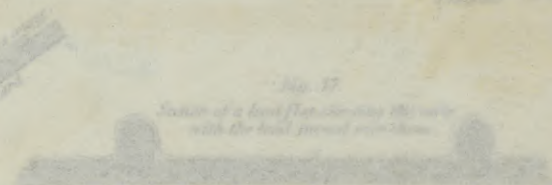


Fig. 37.

Section of a lead flat showing the way
with the lead joined over them



Wood brick
Narrow
Plaster
(See Fig. 31.)



WS

Transverse Section of a window.

Inside elevation of a window.

Section of an inner door.

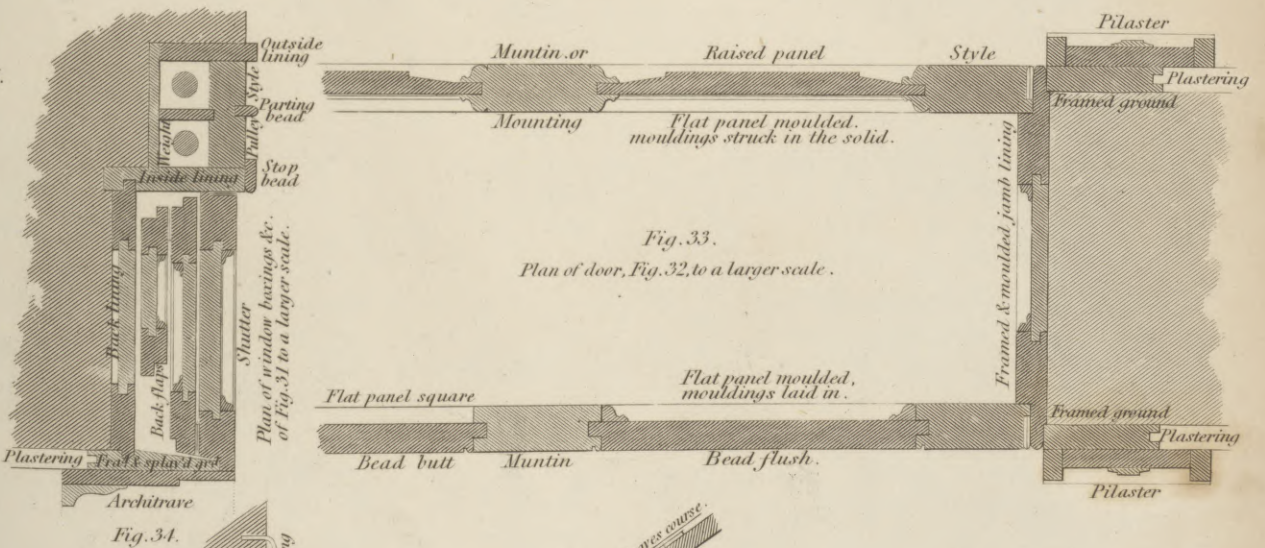
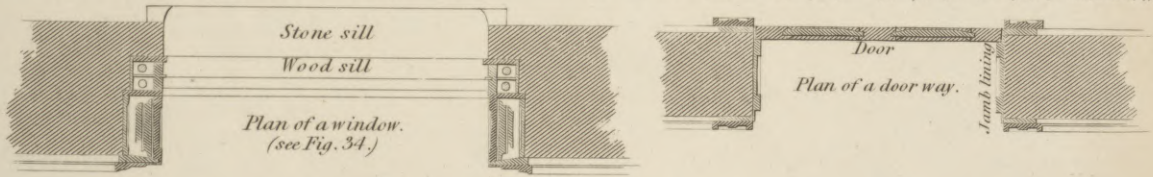
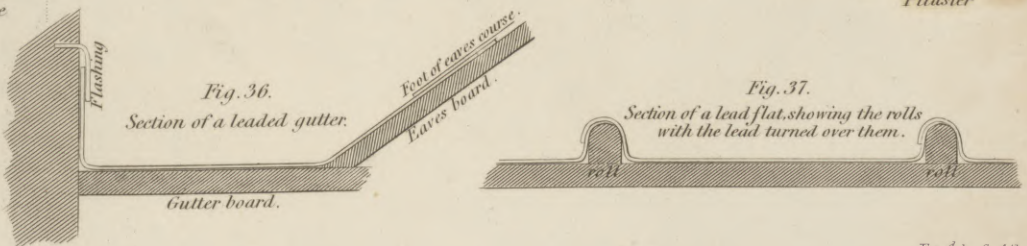


Fig. 36. Section of a leaded gutter.

Fig. 37. Section of a lead flat, showing the rolls with the lead turned over them.



BURNING GLASS.

PLATE CXLI.

Fig. 1.

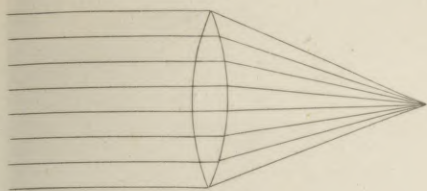


Fig. 2.

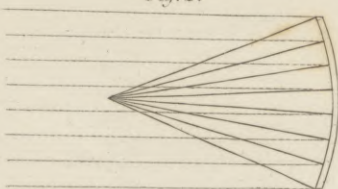


Fig. 3.

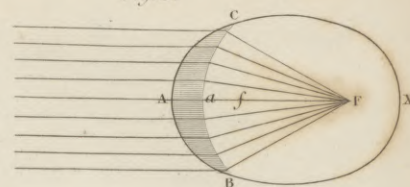


Fig. 4.

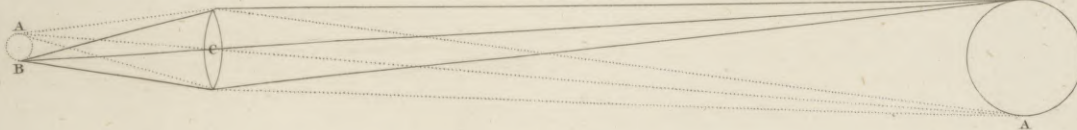


Fig. 5.

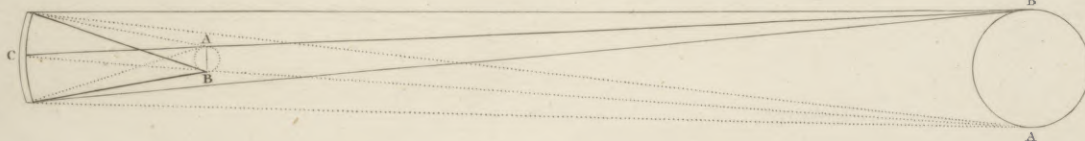


Fig. 7.

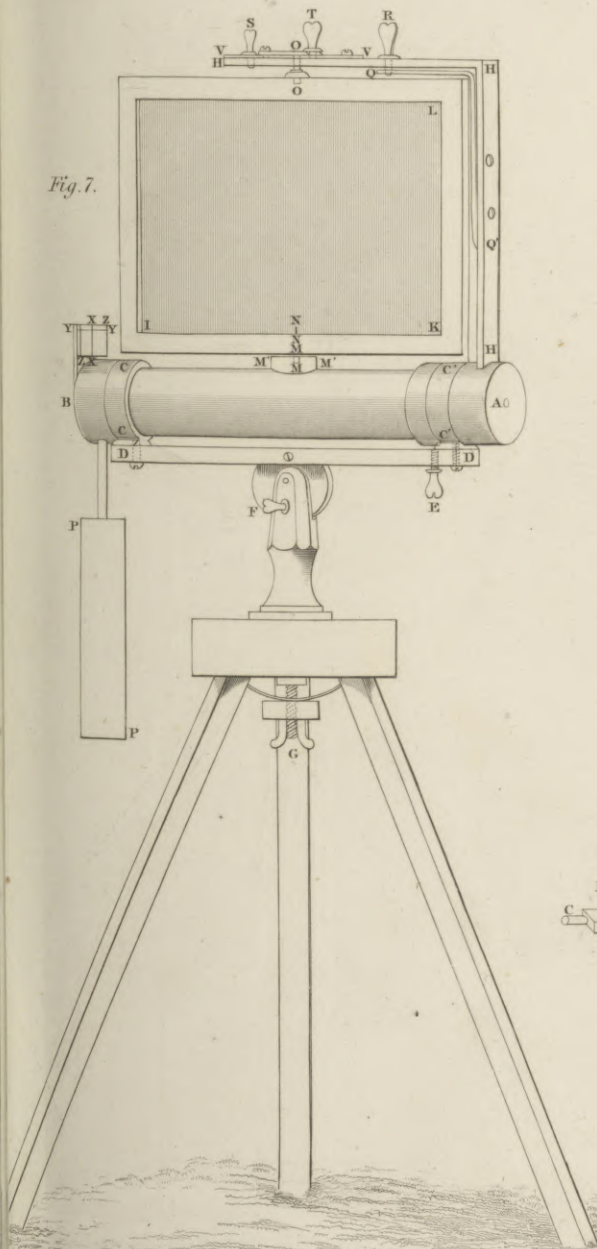


Fig. 8.

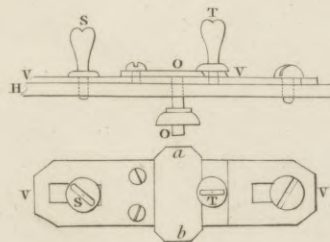


Fig. 11.

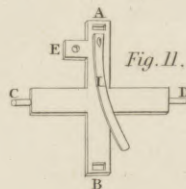


Fig. 12.

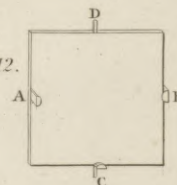


Fig. 9.

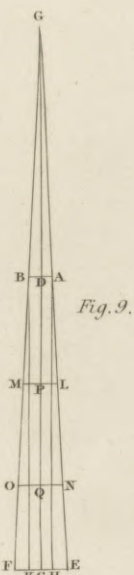


Fig. 10.

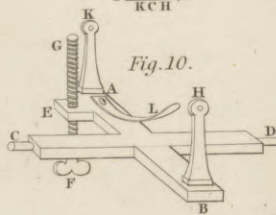
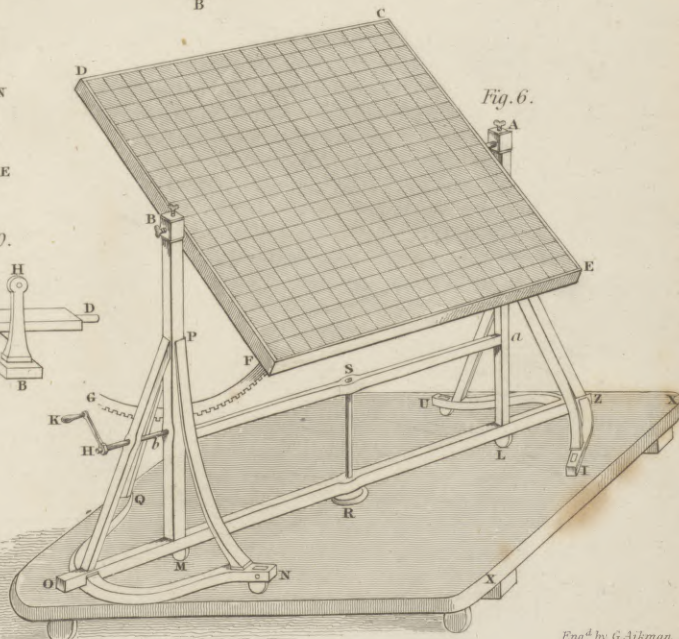


Fig. 6.





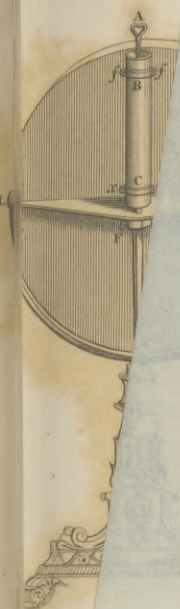


Fig. 1



Fig. 2



Fig. 3.



Fig. 4.

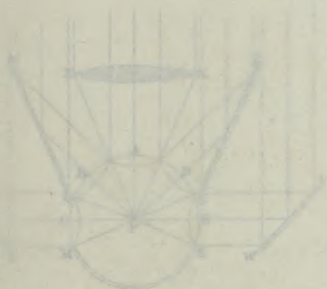


Fig. 5.

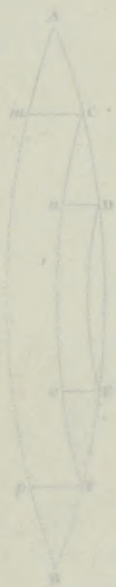


Fig. 6.

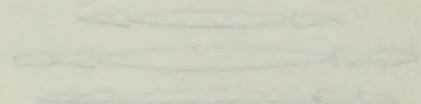


Fig. 7.



Fig. 8.

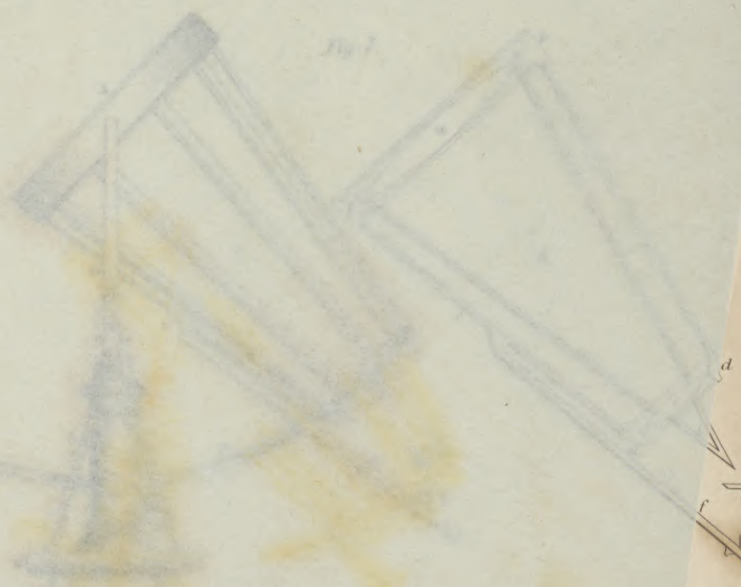


Fig. 1.

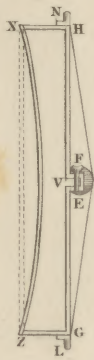
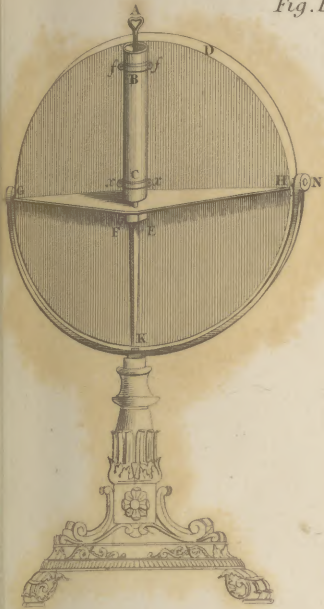


Fig. 2.

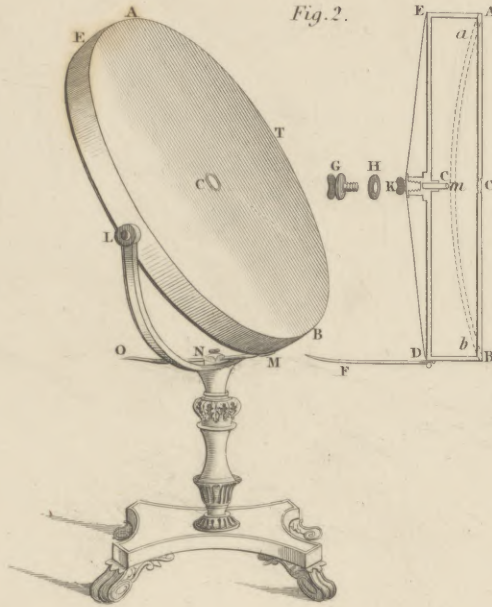


Fig. 3.

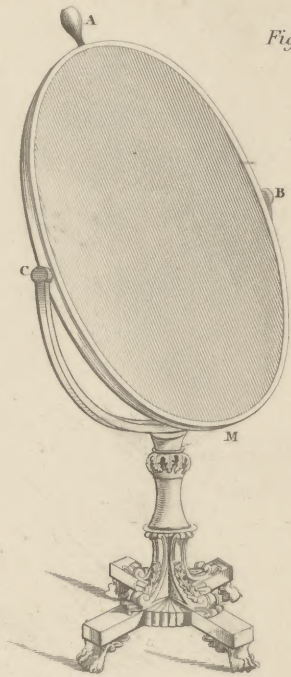


Fig. 8.

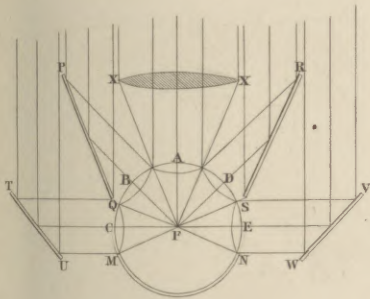


Fig. 6.

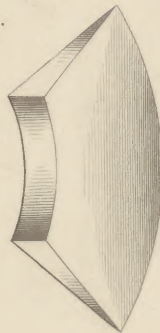
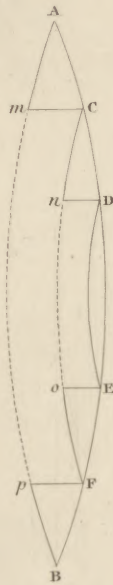


Fig. 5.

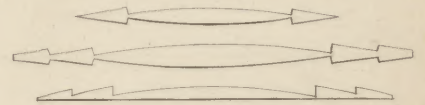


Fig. 4.

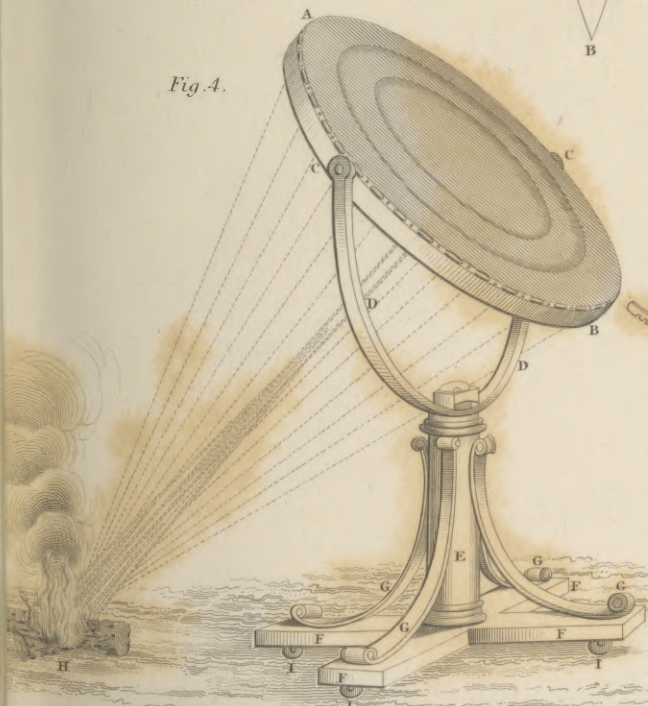


Fig. 7.

